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The New international year book

**THE NEW
INTERNATIONAL
YEAR BOOK**

**A COMPENDIUM OF THE WORLD'S
PROGRESS**

FOR THE YEAR

1920

EDITOR

FRANK MOORE COLBY, M.A.

**NEW YORK
DODD, MEAD AND COMPANY**

1921

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PREFACE

Among the leading topics in the present volume—the nineteenth since the work began in 1898 and the fourteenth in the new series beginning in 1907—may be mentioned the following: The Presidential Election (article UNITED STATES), including summaries of the debates on the Treaty and other points at issue and the main features of the campaign; the League of Nations whose history during the first year of its existence is outlined under WAR OF THE NATIONS; and the long list of international quarrels, controversies, and partial settlements covered under WAR OF THE NATIONS and under the titles of the countries concerned, including the friction between France and England, the questions of German disarmament and reparations, the divergence of policy in respect to resumption of trade with Russia, Poland's war with the Soviet government, conflict among the Allies in respect to Poland, problems of Lithuania and the new Baltic states, Danzig, the Wrangel movement, Upper Silesia, the Adriatic Question and the Treaty of Rapallo, Armenia and the new Armenian Republic, the Turkish Treaty, the return of King Constantine to Greece, the Sinn Fein movement (article GREAT BRITAIN), spread of Bolshevism among Socialists (article SOCIALISM), difficulty between the United States and Japan, etc. Outside the political field the groups of articles dealing with labor subjects, agriculture, industries, and applied science are of especial importance, including AERONAUTICS; AGRICULTURE; CHEMISTRY, INDUSTRIAL; topics in ENGINEERING; MEDICAL PROGRESS; MILITARY PROGRESS (with an account of the military reorganization act); NAVAL PROGRESS; SHIPPING and SHIPBUILDING; the articles on the respective industries and products, etc. The death roll, including the Empress Eugénie, Wundt, Howells, and many other famous names, is unusually long.

FRANK MOORE COLBY.

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THE NEW INTERNATIONAL YEAR BOOK

ABNEY, Sir WILLIAM DE WIVELESIE. British scientist, died at Folkestone, England, December 2. Since 1903 he had been scientific adviser to the Board of Education and a member of the advisory council for education to the War Department. He was born at Derby, July 24, 1843, and became a captain of the Royal Engineers in 1873. He was president of the Royal Astronomical Society 1893-5 and of the Physical Society 1895-7. He was celebrated for his researches in photography and spectroscopy, in which fields he published several important books, including *Instruction in Photography* (1870); *Treatise on Photography* (1875); *Color Vision, Color Measurement and Mixture* (1893); *Trichromatic Theory of Color* (1914). He also wrote a volume on Thebes in 1876, and *The Pioneers of the Alps* (with C. D. Cunningham) in 1888.

ABYSSINIA. A monarchy in northern Africa to the southwest of the Red Sea with Sudan, Massaua, the French Somali coast, and the British Somali Protectorate on the west, and British East Africa and the Uganda Protectorate on the northwest and south. Its estimated area is 350,000 square miles and its estimated population more than 8,000,000. It is divided into the following nine provinces: (1) Harar and dependencies; (2) Wollo; (3) Kassa and Magi; (4) Gore; (5) Tigre; (6) Damot and Gojam; (7) Equatorial Provinces; (8) Gondar; (9) Gima or Jimma. Its independence was recognized by Italy on October 26, 1896, by the convention of Addis Abeba and its frontiers were determined by treaties with Great Britain and Italy. On December 13, 1906, Great Britain, France and Italy undertook to preserve its integrity and agreed that henceforth industrial concessions should be so granted as not to injure the interests of any of the contracting Powers. They also agreed to abstain from interfering in the internal affairs of the country, but to act together in harmony for the protection of their interests in bordering lands, etc.

The inhabitants have been Christians since their conversion in the fourth century and they have remained members of the Alexandrian church under an Abuna or head bishop who is always a Copt and appointed by the patriarch of Alexandria, subject to a native prelate known as the Echehebeh. The ecclesiastics number about 100,000. The people are generally illiterate, education being for the most part confined to the clergy. Only one school was reported, namely,

that of Addis Abeba, and this had about 100 pupils, for although an edict was passed in 1907 declaring education compulsory it has remained a dead letter. The administration of justice is in the hands of the provincial governors and chiefs with right of appeal to the emperor; and the basis of the legal system is the code of Justinian. The people are of Semitic origin and consist of the following race groups: Gallas, Somalis, Shoans, Tigrisians and Danakils. The Gallas constitute fully one-half of the population and are chiefly pastoral and agricultural. The Shoans, from whom the ruling class is derived, number about 1,500,000. The Danakils are Mohammedans. There are also some negroes in the southern part. The chief pursuits are agriculture and grazing; though the soil is capable of producing diverse crops, culture is backward. Theoretically the soil belongs to the Negus or Emperor and the system of private property can hardly be said to exist. Stock-raising is of some importance, and cattle, sheep and goats are plentiful. Breeds of small horses and small donkeys are raised and are used as pack animals. Cotton, sugar cane, dates, coffee and the vine are cultivated to some extent. Coffee production is increasing and besides the cultivated coffee, which is the long berry Mocha, there is in the southern and western portions a considerable growth of wild coffee plants. The total exports of coffee were estimated in 1916 at 6364 metric tons. Other native products are hides and skins, millet, barley, wheat, tobacco and gesho. The manufacturers are in a backward state, but in some districts hatchets, knives and other implements are made. Minerals are found, including iron, coal, sulphur, copper and silver, but are not extensively worked. In some parts of the country placer gold-mining is carried on. Commerce takes for the most part the route of the French Ethiopian railway, but there is a considerable caravan trade in the interior. The chief exports are hides and skins, coffee, wax, civet, ivory and butter. Spices, gums, gold and rubber are also exported to some extent. The imports, which are chiefly from England, France, India, Italy and the United States, comprise for the most part manufactures, including cotton goods, arms and munitions, liquors, railway materials, sugar, and petroleum. The exports through Jibuti in 1917 were reported as follows: Hides, 5,704,423 kilos; coffee, 5,092,647 kilos; and beeswax, 381,313 kilos. In that year the exports to the Sudan were reported as follows:

Coffee, £E105,895; wax, £E18,265. Imports from the Sudan in 1917 amounted to £E65,226. The Board of Trade reported the exports from Abyssinia into Great Britain for 1919 at £28,947 and the imports from Great Britain to Abyssinia at £10,822. Highway communications are backward and transportation depends on mere trails on which pack animals, including sometimes camels, are employed, but in the neighborhood of the capital some few miles of metaled road have been made. There is a French railway line to Jibuti and to Diré Dawa, 187 miles in length, and after January, 1909, measures were taken to complete the line to Addis Abeba. This reached the capital in 1917. Telegraph lines connect Addis Abeba with Harar, with Jibuti in French Somali, and with Massaua in Eritrea, the length being about 1056 miles. There is also a small mileage of telephone wire. The coin of the country is the Maria Theresa dollar, to which in late years has been added the Menelek dollar of about the same value, that is, in the neighborhood of fifty cents.

The government is feudal, under a sort of state council consisting of the chief notables. In 1919 a form of cabinet government was introduced. The army amounts to about 200,000 men, but is ill equipped and ill organized. After the death of Menelek in December, 1913, his grandson, Lidj Yasu, succeeded, but was deposed September 27, 1916, and succeeded by a daughter of Menelek, Waizeru Zauditu, born in 1876. She was crowned February 11, 1917, and the chief or Ras, Taffaria, was proclaimed regent and heir to the throne. The government was recognized by Great Britain, but unstable conditions as the result of civil war prevailed during 1917, 1918 and 1919.

ACADEMY, FRENCH (ACADÉMIE FRANÇAISE). The oldest of the five academies which make up the Institute of France and officially considered the highest; founded in 1635; reorganized in 1816. The list of its members known as the Forty Immortals in 1920 was as follows: Othénin de Cléron, Comte d'Haussonville; Charles Louis de Saules de Freycinet; Louis Marie Julien Viaud (Pierre Loti); Ernest Lavisse; Paul Bourget; H. G. Anatole François Thibault (Anatole France); Gabriel Hanotaux; Henri Emile Lavedan; Paul Deschanel; Frédéric Masson; René Bazin; Alexandre Ribot; Maurice Barrès; Maurice Donnay; Jean Richepin; Raymond Poincaré; Eugène Brieux; Jean Aicard; René Doumic; Marcel Prévost; M'g'r Duchesne; Henri de Régnier; Denys Cochin; General Lyautey; Emile Boutroux; Alfred Capus; Pierre de la Gorce; Henri Bergson; Marshal Joffre; Louis Barthou; R. M. A. Tardiveau (R. Boylesse); François de Curel; Alfred Baudrillard; Marshal Foch; Georges Clemenceau; Jules Cambon; Henri Bordeaux; Robert de Flers; Joseph Bédier; Louis Chevrillon. Three of the above were elected in 1920, namely Robert de Flers, Joseph Bédier and André Chevrillon, whose receptions were to be held between February 7 and April 15, 1921, at intervals of one month. The Academy held its great annual public meeting on November 25th, with M. Raymond Poincaré presiding. There were speeches by the presiding officer and reports from M. Frédéric Masson, and M. Jean Richepin. Meanwhile the work on the dictionary was proceeding and had advanced into the letter H.

Of those elected in 1920, Robert de Flers is a

popular dramatist, who had won great success before the war by a long series of plays written in collaboration with G. A. Caillavet, including one, *L'habit vert*, which had humorously satirized the Academy itself. Joseph Bédier is a prominent philologist. He was an active propagandist during the war and his writings, including an edition of the diaries of German soldiers, published early in the war, were widely circulated in translations in the countries of the Allies. André Chevrillon is the nephew of Taine and the author of books on India and on Ruskin in English literature, among other subjects, and has visited the United States.

ACADEMY OF ARTS AND LETTERS, AMERICAN. Founded in 1904 by seven members of the National Institute of Arts and Letters. This society is patterned on the French Academy in Paris. Membership is limited to 50 persons. Beginning in 1909 a series of annual meetings have been held. Until 1919 William Dean Howells was president of the Academy, but his death on April 11, 1920, caused the election of a new president, William Milligan Sloane. During 1920 four new members have been elected to the Academy: Childe Hassam of New York, David Jayne Hill of Washington, D. C., Lorado Taft of Chicago, Ill., and Booth Tarkington of Indianapolis, Ind. These members were to fill vacancies caused by the death of Julian Alden Weir, Horatio William Parker, and William Dean Howells, and one chair previously vacant.

The fifth series of addresses given under the auspices of the Academy was given at the Chemists' Club, 50 East 41st Street, New York City, during 1920. Speakers and their subjects were as follows: "The Spirit of Italy," by William Roscoe Thayer; "Music and Liberty," by William J. Henderson; "The English Language in America," by Paul Shorey; "The Literature of Japan," by William Elliot Griffis.

In 1920 the membership list was as follows: John Singer Sargent, Daniel Chester French, John Burroughs, James Ford Rhodes, William Milligan Sloane, Robert Underwood Johnson, George Washington Cable, Henry van Dyke, William Crary Brownell, Basil Lanneau Gildersleeve, Woodrow Wilson, Arthur Twining Hadley, Henry Cabot Lodge, Edwin Howland Blashfield, Thomas Hastings, Brander Matthews, Thomas Nelson Page, Elihu Vedder, George Edward Woodberry, George Whitefield Chadwick, Abbott Henderson Thayer, George de Foret Brush, William Rutherford Mead, Bliss Perry, Abbott Lawrence Lowell, Nicholas Murray Butler, Paul Wayland Bartlett, Owen Wister, Herbert Adams, Augustus Thomas, Timothy Cole, Cass Gilbert, William Roscoe Thayer, Robert Grant, Frederick MacMonnies, William Gillette, Paul Elmer More, Barrett Wendell, Gari Melchers, Elihu Root, Brand Whitlock, Hamlin Garland. Those elected after 1918 were Paul Shorey, Charles Adams Platt, Maurice Francis Egan, Archer M. Huntington, Childe Hassam, David Jayne Hill, Lorado Taft, Booth Tarkington. The permanent Secretary of the Academy in 1920 was Robert Underwood Johnson. Headquarters are at 347 Madison Avenue, New York City.

ACADEMY OF SCIENCES, NATIONAL. A body of distinguished American scientists incorporated by act of Congress, March 3, 1863, for the purpose of promoting scientific research and of examining, investigating, and reporting

upon any subject of science or art when called upon to do so by any department of the government. There are two meetings held each year: An annual meeting, held in Washington in April, and an autumn meeting, held in November, the time and place decided upon at the April meeting. The annual meeting of 1920 was held April 26th-28th. Among the papers read were: "Conservation of National Resources," by J. M. Clarke; "On the Rate of Growth of the Population of the United States since 1790 and its Mathematical Expression," by Raymond Pearl; "Growth and Development as Determined by Environmental Influences," by Franz Boas; "Plural Births in Man," by C. B. Davenport; "A Psychological Study of the Medical Officers of the Army," by R. M. Yerkes; "The Vertical Interferometer," by A. A. Michelson; "The Scale of the Universe," by H. Shapley and H. D. Curtis; "The Influence of Cold in Stimulating the Growth of Plants," by F. V. Coville; "Recent Notable Progress in the Theory of Numbers," by L. E. Dickson; "The Air Resistance of Spheres," by L. J. Briggs; and "Reports on the Researches of the Late Professor C. C. Trowbridge," by Mabel Weil. A large number of other subjects were discussed at this meeting and at the autumn meeting held at Princeton University, November 16th-17th. The Academy issues a Report, prior to each annual meeting; *Biographical Memoirs* and *Scientific Memoirs*, at irregular intervals; and the *Proceedings*, the latter a periodical of twelve numbers each year, the only publication issued by the Academy which requires subscription. In 1920 there were 189 active members, one honorary member, and 37 foreign associates. There are 17 trust funds totalling \$473,303.84. Officers for 1921 are: President, Charles D. Walcott; vice-president, A. A. Michelson; home secretary, Charles G. Abbot; foreign secretary, George E. Hale; and treasurer, Frederick L. Ransome. Headquarters are care of the Smithsonian Institution, Washington, D. C.

ACCIDENTS. See AUTOMOBILES; RAILWAY ACCIDENTS; SAFETY AT SEA.

ACTIVATED SLUDGE. See SEWERAGE AND SEWAGE PURIFICATION.

ADAM, PAUL. French writer, died in Paris, January 2nd. He was born in Paris in 1862 and during the Boulangist movement in 1889 was an unsuccessful candidate for parliament. In his first novel, *Chair molle* (1885), he showed the influence of Zola. He later wrote a number of stories in the vein of the symbolists, and several historical romances. One of the most celebrated of his writings was *La ville inconnue*, which had passed through ten editions in 1911. He grouped his novels dealing with contemporary life under the title of *L'époque* and those dealing with an earlier time, under the title *Le temps et la vie*. The stories which showed the influence of the symbolists were: *Robes rouges* (1891); *Le mystère des foules* (1895); and *La Bataille d'Ude* (1897). The historical romances, dealing with the period 1792 to 1830, were: *La force* (1898), new ed. (1910); *L'enfant d'Austerlitz* (1902); *La ruse* (1903); and *Au soleil de juillet* (1903). In 1913 he wrote the problem novel, *Stéphanie*. He also wrote the drama entitled *Le ouïvre* (1896), and before that, in collaboration with G. Mowrey, another, entitled *L'automne* (1893).

ADAMS, WILLIAM FORBES. Bishop, died

March 5, 1920. He was born at Enniskillen, Ireland, Jan. 2, 1833; came to the United States in 1841, and was admitted to the Mississippi bar in 1844, but determined to enter the ministry. He was ordained priest in 1860 and was rector in New Orleans from 1860 to 1875, when he was consecrated bishop of New Mexico and Arizona. He resigned soon afterwards on account of failing health and from 1876 to 1887 was rector at Vicksburg, Miss., and from 1887 to the time of his death he was bishop of Easton.

ADELPHI COLLEGE. A non-sectarian institution of the higher education at Brooklyn, N. Y.; founded in 1896. In the summer school of 1920, the enrollment was 145, and for the year 1920-21 in the regular college it was 294; in the extension it was 129. There were 22 members in the faculty. The library contained 17,500 volumes. President, Frank Dickinson Blodgett, LL.D.

ADEN. A British territory consisting of a volcanic peninsula on the Arabian coast which forms an important coaling station on the route to the East and is well fortified. It lies about 100 miles east of Bab-el-Mandeb and part of the Presidency of Bombay. The area is about 75 square miles; with the Protectorate, about 9000 square miles. The settlement includes also the island of Perim with an area of five square miles. The population in 1911 was 46,165 and the population of the Protectorate was about 100,000. The chief industry is salt production and the next in importance is the manufacture of cigarettes. It has mainly a transit trade. In 1918-19 the imports by sea were valued at £5,185,209; by land, £105,129; total including treasure, £5,470,743. The chief imports were cotton piece goods, grain, hides and skins, coal, tobacco and provisions. The exports by sea in 1918-19 were £4,536,949; by land, £16,200; total, including treasure, £4,573,916. The chief exports were coffee, gums, hides and skins, cotton goods, and provisions. The shipping in 1918-19 included 500 merchant vessels of 950,141 tons net entered, of which 323 were British. The government is under a political resident with four assistants.

ADVANCEMENT OF SCIENCE, AMERICAN ASSOCIATION FOR THE. This is an association founded in 1848 on the principle that in a democracy where no dependence can be had upon a leisure class, science can only be supported as a result of the organization of scientific men. The association has since its beginning done work of the greatest importance in encouraging scientific research and promoting interest in its results. It consists of affiliated national societies which either meet regularly on their own account or during the annual convention week of the association which is held at the close of each year. During the 10 years of its existence the meetings have been held in Baltimore, Boston, Minneapolis, Washington, Cleveland, Atlanta, Philadelphia, Columbus, New York, Pittsburgh, and St. Louis. There is also a Pacific Coast Division which holds meetings independently in the summer and a general meeting under its direction was held in 1915. The official organ of the association is the weekly journal *Science*. Membership is about 15,000.

The annual meeting in 1920 was held in Chicago on December 29th-31st. A paper was read by Prof. A. A. Michelson, of the University of

Chicago entitled "The Application of Interference Methods to Astronomical Measurement," in which he announced the perfecting of a device for measuring the diameter of stars by interference methods. He gave the result of the first application of the device to one of the stars in the constellation of Orion (Alpha Orionis) whose distance has already been determined by parallax methods. He showed that this star, Betelgeuse, has a diameter of 260,000,000 miles or 300 times that of the sun. The first test of this method was made at the Mount Wilson Observatory in southern California. Professor Michelson, who is recognized as one of America's foremost scientists, has been working on this device for a number of years.

In a paper by Dr. Robert W. Woods of the Johns Hopkins University, he explained what is known as the "chemical eye." This device was used for signaling during the war. Taking the ultra-violet rays, which are invisible to the naked eye, Dr. Woods invented a mechanism which can detect these rays and make them visible to the human eye. A large number of other addresses were read of great value to science.

ADVENT CHRISTIANS. See ADVENTISTS.

ADVENTISTS. The Seventh-Day Adventists is the largest branch of this denomination. The latest available figures were for 1919 which showed: 2254 churches with a total membership of 95,645; 708 ordained ministers; 434 licensed ministers; 762 licensed missionaries, with others making a total number of workers of 2881. Total tithe receipts amounted to \$3,313,307.05 or \$34.64 per capita. Total offerings to foreign missions amounted to \$789,691.63. Total contributions for home missionary work amounted to \$525,856.66. There were 2987 Sunday schools with a total membership of 96,351 pupils; the 1284 church buildings had an estimated value of \$2,753,425.30; church schools numbered 715 with a total enrollment of 15,968; young peoples' societies numbered 1156 with a total membership of 22,128. Total contributions for young peoples' work amounted to \$96,720.94. The denomination maintained seven publishing houses, publishing literature in 96 languages. Volumes issued during the year numbered 3015. There are 158 mission fields and 77 educational institutions connected with the church, 16 of which carry full college courses, notably Loma Linda College, Pacific Union College, and Walla Walla College.

Other branches of the Adventists are the Adventists Christian Church, which in 1916 (the latest available statistics) had 30,316 communicants, 640 churches, and 826 ministers (the figures for 1920 being about the same); the Adventists Church of God, with about 10,000 communicants, 100 churches, and 80 ministers in 1920. This denomination was about to build a college in the Central States at a cost of \$100,000. Other branches of the Adventists are Life and Advent Union, with about 700 communicants, 20 churches, and 15 ministers; and the Church of God and Jesus Christ, with about 4000 communicants, 90 churches and 50 ministers.

AERONAUTICS. In no field of activity was the after-war readjustment more conspicuous than in many of the fields of aeronautics. Vast numbers of airplanes and airships had been designed, built and used in the World War, and they had figured to a remarkable degree in mili-

tary and naval tactics. In an incredibly short space of time improved machines had been designed and developed and hosts of intrepid young men had become skilled in their operation and use. But design and use so rapidly developed had been with the single aim of war, and once hostilities were terminated a vast amount of material and a large personnel were left without corresponding civil activities to which their special equipment and talents could be immediately adjusted. In other words where the military side of aeronautics had advanced by leaps and bounds, in its civil application it had all but languished during the war. However vast industries had been built up, improved machines developed and even transatlantic flight as we saw in the 1919 YEAR BOOK accomplished. The first application was for mail transportation and while there were many sporadic attempts in this field in Europe, the United States, as is related below, was the first to undertake aerial mail service on a wholesale and practical scale. This was developed and in addition to the use of unnecessary military and naval planes, newer models were tested.

In connection with public and private mail and parcel routes one of the developments of the year was to secure increased carrying capacity both for freight and passengers. In fact it was realized that there must be increased efficiency and power to secure commercial success. Accordingly various passenger craft able to accommodate a number of people in large cabins were placed in operation on many routes, and at the end of the year airplanes to carry one hundred or more people were seriously proposed or were reported to be under construction. With all of this however there was confessedly a lack of general demand for aircraft and the natural explanation was that the financial and industrial condition was not such as to warrant large investments in what must be considered a hazardous and uncertain undertaking, though the eventual future success was admitted.

As a result, the use of aircraft outside of the government services while promising and growing was rather sporadic and unevenly distributed, and the same was true of the demand for machines, even when the salvaged or superfluous machines of the military and naval forces were put on the market. This condition was also reflected in design for now the improvements became rather refinements both in the machines themselves and in their power plants, though many of these improvements were dictated by sound principles of mechanical engineering. Many of the leading types were perfected, while newly designed machines did not reveal any radical innovations. However the industry was maintained in such a condition that once industrial conditions improved and commerce and business enterprise developed aircraft would be ready to play their part.

In Europe during the year there was an increased number of passenger routes established and maintained, their operation being attended by regularity of service and safety. Not all were financially successful, however, and this was explained as due to existing conditions rather than to shortcomings in the machines and airplane traffic generally. In America passenger business has lagged somewhat, at least in the establishment of regular routes and service but there was increased use of airplanes for

practical communication even outside of the mail service.

In many countries the assimilation of aeronautics to more normal conditions from those of war presented legislative and administrative problems. In fact even in the military and naval services themselves the position of aviation continued to be discussed. In the United States there were demands for a special national department or administration of aviation while the National Advisory Council of Aeronautics continued to function, composed as it was of notable men. In Europe readjustments were not so much hindered or helped by government action save as they concerned political and financial considerations.

A necessary adjunct of aerial travel is a sure means of communication between aircraft and the ground and other aircraft. Improvements in the radio telephone were made during the year, and on November 10th, the United States navy announced that its instruments could be used up to 300 miles. This method of communication had more than military importance for in the detection of forest fires or in mapping or surveying ability to transmit intelligence to a ground station promptly is a most valuable consideration.

So far as capacity was concerned for American machines a mark was set on September 29th when a large bombing plane, the largest yet built in America, driven by three Liberty motors was accepted by the Army Air Service after trials at Mitchell Field, Long Island, N. Y. This of course indicated a machine that readily could be modified from strictly military purposes for passengers and freight.

In Italy during the year, it was reported that Gianni Caproni, the aeroplane inventor, was considering the construction of a huge airplane which would carry 300 persons across the Atlantic in about 36 hours. In the plans for this machine due provision was to be made for dining and sleeping accommodations on board.

Signor Caproni, during the year was at work on a somewhat smaller airplane capable of carrying 100 persons a distance of 500 miles. This was reaching completion at the end of the year and the larger machine was to be put under way early in 1921.

The comparative advantages and uses of monoplane and biplane continued under discussion and experiment during the year, with improved design and construction being shown particularly for the monoplane. All-metal monoplanes were being turned out for various conditions of service and showed greater strength and made possible relatively more powerful engines capable of more sustained flights.

As showing the trend of airplane design during 1920 one must consider the attention paid to the wings of the various machines, particularly those of high-speed airplanes. In new designs variable camber and variable surface wings were introduced, the former being used in the Dayton-Wright monoplane flown by Rinehart at the Gordon-Bennett competition. By varying the wing surface as was done in certain French high-speed machines it was possible to secure a range of speed from 125 miles to about 30 miles an hour thus increasing the facility of landing which had been a weak point with the swifter planes.

With increased size of machines there have

been developments in the power plants and many improvements and refinements added to the engine. To secure increased power and safety a number of engines are used on a single plane so that they may be run together, or one disconnected for repair as in case of mishap. With greater leisure and the practical experience of the war, the automotive engineers who specialized in this field have sought to perfect their engines and the result has been longer runs and greater reliability.

A typical instance is that of the Hispano-Suiza engine at the hands of the engineers of the Wright Aeronautical Corporation. This engine was first made for the United States Air Service in 1917, the first being turned out by the Wright plant in July, 1917. As a result of many improvements and re-designing, the Wright Corporation changed the name of the engine from the Wright-Hispano to Wright. The Hispano engine when first imported to the United States as the best of existing European types had many strong points including lightness and flexibility, but it lacked durability and the Wright Corporation which purchased the American rights sought this important improvement even when the air service was demanding in 1917 and 1918 larger production. The first 2500 Hispano-Suiza engines made at the big New Brunswick plant of the Wright Corporation were only slightly modified, but these modifications were so successful that a number of changes in design were made with the consent of the Air Service and subsequently there were further improvements.

An echo of the famous transatlantic flight of the NC-4, discussed in the YEAB BOOK for 1919, was a trip of this airplane early in 1920 down the Atlantic Coast and up the Mississippi River to Cairo, Ill., returning to the Naval Air Station at Rockaway Point, N. Y., on January 27th. It had then negotiated 7740 nautical miles. Long-distance trips however were quite common during the year and on April 25th Clifford Webster in a Curtiss HS-2L flying boat with two passengers flew 1345 miles from Florida to New York in 18 hours and 27 minutes.

On Monday, Nov. 1, 1920, the first American passenger air line service was inaugurated, to operate on a daily schedule between Key West and Havana, a distance of about 90 miles, for which a little over one hour was required. Six Aëromarine cabin flying boats of the largest size ever used for the transportation of passengers were put into service between the Florida Keys and the Cuban capital. These big boats, which were a development of the F-S-L flying boats of the United States navy have a span of 104 feet, are fitted with two 400 h.p. Liberty engines, and accommodate in comfort 11 passengers.

There are two passenger cabins between which is located the control compartment, housing the dual control gear (permitting the pilot to surrender control at any time to his assistant) and the necessary air navigation instruments. Two pilots and a mechanic make up the crew of each of these flying boats. An interesting and useful work of the Air Service on the Pacific Coast of the United States was the patrol of the forests during the dry season in order to detect and report promptly forest fires. In Oregon and California 494 forest fires were located and reported, in many cases radio reports being rendered promptly to the Forest Service so that

preventive measures could be taken by the rangers. It was estimated that the Air Forest Patrol during the year was the means of saving some \$25,000,000 worth of timber. The airplane was also being used in the Dominion of Canada by the government, and the Royal Canadian Mounted Police decided that for outpost duty in outlying districts airplanes and flying boats could be used with advantage, and accordingly they were adopted. An interesting event of the year was the unveiling of a monument to Wilbur Wright on July 17th at Le Mans, France. The monument was the work of the French sculptor Landeroski and the architect Bigot. It is a column 40 feet high carved with figures, including those of Orville and Wilbur Wright and the names of their precursors in aviation from Dædalus. There were elaborate and appropriate ceremonies in connection with the dedication. The monument stands hard by the cathedral.

CIVIL FLYING IN GREAT BRITAIN. On May 1, 1919, civil flying was resumed in Great Britain and a number of commercial ventures were launched ranging from passenger and express service to the Continent to less ambitious local activities. At the end of the year, or May 1, 1920, there were reported for the 12 months 38,954 flights and a total of 70,000 passengers carried. The number of miles flown aggregated 734,200 and the goods carried totaled 116,498 pounds. Up to the end of March, 1920, there had been more than £200,000 worth of imports and exports carried by air. There were 114 aerodromes licensed and 519 machines registered for civil flying during the year. In many cases salvaged military and naval planes were used.

The British Air Ministry was alive to the necessity of developing aviation and the airplane industry and accordingly announced a series of valuable prizes for encouraging improved design and development of efficient machines, both airplanes and seaplanes. The first prize for the large aeroplane was not awarded as the Judges' Committee considered that the results of the Competitions for aeroplanes showed collectively less radical advance in general design than had been anticipated, and that though very useful developments in detail design have been produced, which in themselves justified the Competitions, the award of the full prizes originally specified was not warranted. The following sums were awarded:

(a) *Large aeroplane class*

First Prize	Not awarded
Second Prize—Messrs. Handley-Page Transport Ltd., H.P.W. 8, fitted with 2,450 h.p. Napier "Lion" engines	£8,000
Third Prize—Messrs. Vickers Limited, Vickers Vimy Commercial, fitted with 2,350 h.p. Rolls-Royce "Eagle 8" engines	£4,000

(b) *Small aeroplane class*

First Prize—Messrs. Westland Aircraft Works, Westland "6-seater," fitted with 450 h.p. Napier "Lion" engine	£7,500
Second Prize—Messrs. Sopwith Aviation & Engineering Co., Ltd., Sopwith "Antelope" fitted with 180 h.p. Wolseley Hispano "Viper" engine	£3,000
Third Prize—Messrs. Austin Motor Co., Ltd., Austin "Kestrel" fitted with 160 h.p. Beardmore engine	£1,500

Late in the year and after transporting some 5000 passengers and carrying mail between London and Paris, the Airco Company found itself compelled to abandon operations.

Other commercial ventures in the way of European passenger services suffered in similar fashion but the reason assigned was the prevailing uncertainty and commercial depression rather than technical shortcomings.

GORDON BENNETT COMPETITION. First place in the annual competition for the James Gordon Bennett trophy held at Etampes, France, on Sept. 20, 1920, was won by Sadi Lecoq, flying in a Nieuport monoplane with a 300 h.p. Hispano-Suiza motor. This distinguished French aviator covered the course of 300 kilometers or 186.3 miles in 1 hour 6 minutes 17.2 seconds, making the first 100 kilometers in 21 minutes 36.6 seconds, which, however, was done by Kush of France also in a Nieuport in 21 minutes 29 seconds. But one other competitor besides Lecoq was able to finish the race. Captain de Romanet, also of France, who accomplished the distance in 1 hour 39 minutes 53.4 seconds. There were two American entries, Howard M. Rinehart and Maj. R. W. Schroeder, United States army, who flew in a Dayton-Wright monoplane and a Verville-Packard machine respectively. Both were forced to abandon the race soon after starting on account of mechanical troubles. F. P. Raynham, the sole British contestant, was forced to withdraw after going around the first lap. This was the third successive time that the Gordon Bennett Cup was won by France.

PULITZER TROPHY CONTEST. Forty-four airplanes of American, French, British, Italian and German design were entered in the race for the Pulitzer Trophy which was flown on Thanksgiving Day, Nov. 25, 1920, around a triangular course of 33 miles at Mineola, L. I. The entire distance was 132 miles, and 34 machines of the seven flights of starters were in the air at once, the entire competition taking place without a single serious mishap. The race was won by Capt. C. C. Moseley, United States Army Air Service, in a Verville army racer, his time being 44 minutes 29.57 seconds, or an average speed of over 3 miles a minute for the entire distance. The Verville army racer was driven by a 600 h.p. Packard motor which was a variation of the Liberty motor. Second place in the competition was taken by Capt. H. E. Hartney in a Thomas Morse American machine with an elapsed time of 47 minutes 00.03 seconds, and the third fell to Albert Acosta in a S.V.A. Italian airplane with an elapsed time of 51 minutes 57.62 seconds.

The summary of winners of the first 10 places in the contest for the Pulitzer Trophy and the Valentine Liberty Bond prizes, aggregating \$5100, follows below. The Valentine prizes were awarded for the elapsed time winners with a particular type of aeroplane.

PULITZER TROPHY

No.	Aeroplane	Pilot	Time
1—	Verville (Am.), Lt. C. C. Moseley, U. S. A.		44: 29
2—	Thomas Morse (Am.), Capt. H. E. Hartney, U. S. A.		47: 00
3—	Ansaldo S. V. A. (Ital.), Albert Acosta, civilian		51: 57
4—	Oreco (Am.), Lt. St. Clair Street, U. S. A.		52: 27
5—	Vought V. E. (Am.), Lt. A. Laverents, U. S. N.		55: 39
6—	De Havilland (Am.), Lt. J. P. Rouillot, U. S. A.		56: 06
7—	De Havilland (Am.), 2nd Lt. Carl Eliason, U. S. A.		56: 09
8—	De Havilland (Am.), 2d Lt. J. B. Wright, U. S. A.		56: 52



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F. LARSEN ALL-METAL MAIL PLANE ARRIVING AT OAKLAND, CAL.



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LAWSON MIDNIGHT AIRLINER FOR PASSENGER AND MAIL SERVICE

MAIL AND PASSENGER AIR-PLANES

20

9—De Haviland (Am.), Lt. C. M. Cummings, U. S. A.	57:08
10—De Haviland (Am.), Lt. D. L. Conly, U. S. N.	57:40

VALENTINE PRIZES

DE HAVILAND CLASS

No.	Aéroplane	Pilot	Time
1—	Lt. J. P. Roulot, U. S. A.		56:06
2—	2d Lt. C. Eliason, U. S. A.		56:09
3—	2d Lt. J. B. Wright, U. S. A.		56:57
4—	Lt. C. M. Cummings, U. S. A.		57:08
5—	Lt. D. L. Conly, U. S. A.		57:40
6—	Capt. H. N. Heisen, U. S. A.		58:15
7—	Lt. V. C. Finch, U. S. N.		58:32
8—	2d Lt. L. Claude, U. S. A.		59:56
9—	Lt. W. R. Lawson, U. S. A.		60:48
10—	Capt. H. B. Mims, U. S. M. C.		60:49

VOUGHT CLASS

Lt. A. Laverents, U. S. N.	55:39
Lt. W. B. Gwyn, U. S. M. C.	59:59
2d Lt. L. H. Sanderson, U. S. N.	60:09
2d Lt. W. V. Brown, U. S. M. C.	61:85
Gunnery Sergt. J. K. Dunn, U. S. M. C.	61:50

S E-5 CLASS

1—Capt. M. Kirby, U. S. A.	59:42
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COMMITTEE INVITATION

1—Capt. H. E. Hartney, U. S. A.	47:00
2—Lt. St. Clair Street, U. S. A.	52:27

Captain Moseley established an unofficial world's record for straightaway speed by making 200 miles an hour on three different occasions during his flight.

Captain Moseley's average speed for the 135 miles was 178.6 miles an hour, which became the official world's record for closed circuit racing.

INTERCOLLEGIATE AIRPLANE COMPETITION. The first intercollegiate airplane meeting was held at Mitchell Field, Mineola, N. Y., with Yale University winning first honors, scoring first place for height, in a 25-mile-cross-country race, and for general performance. G. W. Horne was winning pilot in the cross-country race and the time was 16 minutes for the distance. Planes representing Yale, Pennsylvania, Pittsburgh, Cornell, Columbia, Williams, Harvard, Lehigh and Wesleyan participated. Second and third places were won by Lehigh and Cornell respectively, the University of Pennsylvania finishing in second place but disqualifying through a technicality.

UNITED STATES ARMY ALASKAN FLIGHT. A 9000-miles flight from Mitchell Field, New York City, to Nome, Alaska, and back was made in the summer of 1920 by four De Haviland 4-B airplanes of the United States Army Air Service under command of Capt. St. Clair Street, United States army. The flight was begun on July 15, 1920, and the round trip consumed 45 days, being negotiated in a series of flights of about 300 miles each or four or six hours daily of flying, the total flying time being 112 hours. Most of the country traversed was well mapped with suitable landing fields and for that portion of the flight across Canada the Dominion government facilitated landing, fuel and other conveniences and necessities. The objects of the flight were to establish a route to Asia across the American continent for military or other purposes and to furnish to the United States Geological Survey photographs of an area of Alaska north of the 66th parallel between Fort Hamlin and the Arctic Circle. This included the upper Yukon flats and its survey by ordinary topographic methods would have cost at least

\$10,000 and required 3 years, while it was demonstrated that this same area could be photographed in some 10 hours or three days flying at an approximate cost of \$1500, and a photograph in some 10 hours or 3 days by the usual topographic methods in the brief time available each year. Finally an important object of this long-distance flight was thoroughly to test the Liberty motor and the new Gallaudet remodelled De Haviland 4-B plane. This was an improvement on the De Haviland plane built during the war for the American Air Service, and lessened the danger materially by placing the pilot's seat in the rear of the gasoline tank instead of between the tank and the motor as in the older models, where in case of fall the pilot was likely to be crushed. The trip was completed on October 20th at New York and on the following day the squadron flew to Washington where it was welcomed at Langley Field, Va., by General Pershing and General March, Chief of Staff. There were four officer pilots, one photograph officer and three sergeants who were expert mechanics.

SPEED RECORDS. During the year 1920 faster travel by airplanes was achieved, and on December 12th Sadi Lecoq, who as noted above had won the Gordon Bennett Trophy for 1920, broke the world's aeroplane record for 4 kilometers (2½ miles). In a flight at Villa Coublay, Lecoq negotiated the distance in 46 seconds, or at the rate of 194.5 miles per hour. Lecoq found as did Moseley that a speed in excess of 200 miles an hour was possible, for on Dec. 16, 1919, covering a distance of 1 kilometer at the rate of 190 miles an hour he was able for some seconds to reach a speed of 226 miles an hour.

Gradually flights of longer duration were being accomplished and on June 4, 1920, Lieutenants Bossoutrol and Bernard, flying from Etampes, France, were in the air continuously for 24 hours 10 minutes and 7 seconds. This record was made in a Farman Goliath airplane.

AIRPLANE ALTITUDE RECORD. A new world's record for altitude was made on Feb. 27, 1920, at McCook Field, Dayton, Ohio, by Maj. R. W. Schroeder, Air Service, United States army. Flying in a Le Pere biplane Major Schroeder ascended to a height of 36,020 feet, over 6.8 miles, a record that after due consideration was officially certified to by the Aero Club of America as 33,113 feet. An estimated temperature of 67 degrees below zero was encountered at the high altitude and the aviator suffered from the extreme cold. His eyes froze, and, becoming unconscious, he lost control of the plane and fell rapidly, recovering at about 1500 feet above ground and in time to make the descent in safety. Major Schroeder after medical attendance fully recovered from his extraordinary experience. On May 27th a Dayton-Wright Aerial Coupe carrying four persons reached a height of 19,700 feet, while a German all-metal monoplane carried eight passengers to a height of 2200 feet.

PARACHUTE RECORDS. Increased attention was paid during 1920 to the use of parachutes for descending from airplanes as well as balloons and to securing increased safety in case of mishap. Notable height records were made during the year and a remarkable achievement was that of Lieut. A. G. Hamilton, Air Service, United States army, who on August 12th

fell 20,900 feet in 12 minutes, establishing a new altitude record.

Lieutenant Hamilton jumped from a La Pere plane piloted by Lieut. P. H. Downes, at Carlstrom Field, Arcadia, Fla. The previous "high jump" record was 19,800 feet, made by Lieutenant Krug in Texas.

AIRSHIPS AND DIRIGIBLES. The part played by airships in the World War was discussed by Admiral Scheer of the German navy in his book, entitled *The German High Sea Fleet in the World War*. The admiral stated that at the outbreak of the war the German navy possessed three Zeppelins, each of 15,000 cubic meters capacity, but as the war progressed this number was increased to 67, 17 of which were lost due to enemy action, 34 were accidentally destroyed, and six were captured by the enemy. This left 10 airships available at the armistice. The ships were not all of the same type but differed in size, continually increasing in their dimensions. Type L-50 had a volume of 55,000 cubic meters, five engines of 260 h.p., a speed of 110 kilometers per hour, and a useful load of 38 tons. In type L-70 the volume was increased to 62,000 cubic meters, seven engines were fitted, and the useful load increased to 43 tons at 130 kilometers per hour. The armament also developed during the war and while the first airships were armed with machine guns, the later types also carried a 2-cm. gun. The crew numbered 20 to 25 all told.

It soon became evident that owing to the rapid development of the aeroplane, the airship was useless on the Western Front and its main service was with the German fleet, and in air raids on England. The last of these air raids took place Aug. 5, 1918, when the L-70 was shot down.

One of the misunderstandings following the Treaty of Versailles concerned the turning over by Germany of its fleet of airships. These were to be distributed among the various nations and all allotted actually were turned over in 1920 except that given to Japan, which after being studied by Japanese officers, was to be shipped in small parts. Three Zeppelins were wrecked by German soldiers during the Armistice week and these too figured in the discussions. America was to have received a Zeppelin, but not participating in the reparation settlement this aircraft was assigned to Italy.

During the year the Zeppelin dirigible L-72 was delivered to France by Germany.

The first proposed designation, "DR-1," was not in accordance with French practice, which assigned names to airships, and accordingly it was renamed the "Dixmude," in recognition of the magnificent work of the French marine fusiliers in defence of that town in October and November, 1914.

Italy also received her share of the Zeppelins and the "L-120" on November 19th left her station at Seerappen, Koenigsberg, for Stolpe in Pomerania, where she was turned over to representatives of Italy. The hangar at Seerappen also was assigned to Italy; to be taken down, transported to Milan, and reerected there to house the "L-120." A duration record of 105 hours was claimed for this airship. Italy also secured from Germany the "L-61" and it was reported that previous to making the voyage to Italy, the "L-61" carried 85 passengers during a trial trip lasting 10 hours at a height

of 2500 meters. The journey from Friedrichshafen to Rome took 12 hours, and to cross the Alps the airship had to rise to 3500 meters. On arrival at Rome it was found that the shed provided was only 15½ inches higher than the airship, but the vessel was docked without mishap.

In Great Britain the completion of the huge dirigibles under construction aroused interest particularly the R-80 which, except for its Wolsley-made Maybach engines, was an all-British design and not as in the case of R-33 and R-34, a copy of Zeppelins. The R-80, while smaller than the R-34 class, had greater speed, which represents an advance in design. These two airships are compared with R-38, which Great Britain built for the United States in the accompanying table.

	R-80	R-34	R-38
Volume (cu. ft.)	1,250,000	1,980,000	2,720,000
Length (ft.)	530	648	695
Diameter (ft.)	70	78	87
Gross lift (tons)	382	59	78
Horse power	960	1,250	2,000
Engines	4 280-h.p.	5 Sunbeams	6 Sunbeams

	Wolsley		
	Maybachs		
Speed max. (m.p.h.)	65	62	72
Speed cruising	50	45	54
Range (miles)	6,500	...	9,000

The R-80 was provided with two streamline cars and a longitudinal gangway connecting them. There was means of egress to the top of the ship where there was a gun platform. The hull was divided into 15 gas containers with transverse partitions, and the transverse section of the hull was 21-sided. The chief features in which the R-80 was considered an advance on previous airships were: abolition of string netting; lighter and less permeable gas bags; increase in aerodynamic efficiency, strength and rigidity by improvements in the form of the cars; improved arrangement of controls; reduction of head resistance by installation of sliding radiators.

The trial flight of R-80 took place on July 19th from Walney Island, Barrow.

The United States airship R-38 referred to above was practically completed during 1920 at Bedford, England, and it was anticipated that its trip to the United States would be made in May, 1921, at which time the hangar at Lakehurst, N. J., would be ready to receive the giant dirigible. With the completion of the Lakehurst hangar, the United States would be in the position to construct airships similar to the R-38. The English hangar in 1920 was the only one in the world in which such a large dirigible could be built and its dimensions were exceeded by that at Lakehurst. In addition to the items in the table the following figures of the R-38 are of interest: Length, 694.5 feet; diameter, 85.5 feet; useful lift, 45 tons; fuel capacity, 32 tons (13 tons available for freight, personnel, etc.); consumption per hour, 180 gallons; cruising radius, 5600 knots; speed, 60 knots; speed, cruising, 50 knots; complement, 6 officers, 19 men; motors, 6 Sunbeam Cossack, 350 h.p.; gas volume, 2,724,000 cubic feet hydrogen; dead weight, 33 tons. The R-38 took part in the celebration attending the return of the Prince of Wales, flying over London. An American crew which had been sent to England to bring back the airship handled the craft.

The largest dirigible actually in use in the United States Air Service in 1920 was the French-built airship "Zodiac," officially known as ZD-1. She was 300 feet in length and ordinarily carried a crew of 3 officers and 10 men. A somewhat smaller airship but of American construction was the United States army airship, D-2, which completed its test at Akron, Ohio, and successfully made the flight from that point to Langley Field via Pittsburgh on October 31st, a distance of 444 miles. The ship, constructed for the government by the Goodyear Tire and Rubber Company, has a gas capacity of 190,000 cubic feet. The dimensions are: Length, 198 feet; height, 58 feet; width, 51 feet 3 inches. It has a cruising radius of 550 miles, which may be extended to 790 when running at half-speed, and an altitude distance of 8500 feet. The ship was fitted with two engines of the Union vee type of 120 h.p. each and making 1400 revolutions per minute.

The D-2 was used for training purposes at Langley, and at the Aberdeen Proving Grounds for bombing work.

THE INTERNATIONAL BALLOON RACE. The annual international competition for the Gordon Bennett Trophy started from the balloon field, North Birmingham, Ala., October 23rd. The field was made up of eight large spherical balloons, including the Pilot, with representatives of the two daily papers, and the Birmingham Chamber of Commerce balloon, piloted by Roy Donaldson. The big bags were filled with the by-product coke gas from the Sloss Sheffield Steel and Iron Company and the balloons ascended in a mild northwest breeze. The Pilot started at 4.15, and 4 to 10 minutes later the others started.

First place in the competition was achieved by the Belgian balloon "Belgica," in charge of Lieutenant De Muyter and Lieutenant Labrousse, which landed at 9.30 A.M., October 25th, at North Hero Island, Vermont. The distance covered was estimated at 1100 miles, which however, was less than the American record of 1173 miles, made by Alan Hawley and Augustus Post, in the International event in 1910. Lieutenant De Muyter, pilot of "Belgica," explained that his landing was forced because he was out of ballast. In its flight the balloon crossed over the Great Lakes, reaching a maximum height of 20,000 feet, at which a heavy snow and rainstorm was encountered.

Second place was achieved by the American balloon "Kansas City II," with H. E. Honeywell and Jerome Kingsbury. This balloon landed at Tongue Mountain, Lake George, N. Y., and its journey covered more than 1000 miles.

Third place went to the Italian entry, with Major Valle as pilot, which, after forty-eight hours in the air, within twenty-six minutes of the American record, made by Clifford B. Harmon and Augustus Post in a national race in 1909, landed near Homer, N. Y.

The "Goodyear II," with Ralph Upson pilot, was fourth for distance, landing at Amherstburg, Ont., across the river from Detroit, being forced down by a heavy snowstorm encountered at 20,000 feet. Its record was 675 miles, and the descent was made at 2.10 P.M. on Oct. 25th.

Fifth in the competition was the French balloon piloted by Capt. Louis Hirschbauer with Leo C. Nathan, aid. It descended at Mason City, Ill., 675 miles distant.

Sixth place went to the U. S. army balloon piloted by Lieut. R. E. Thompson, with Capt. H. E. Weeks aid. It traveled 622 miles to Charforce, Mich.

NATIONAL BALLOON RACE. This contest for 1920 was started from Birmingham, Ala., on September 25, and was won by H. E. Honeywell of St. Louis flying the balloon "Kansas City II," which accomplished a flight of 700 miles, landing at Thamesville, Ont. Dr. J. Kingsberry accompanied Honeywell as aid. The second longest flight was by U. S. Army Balloon No. 1, with Lieut. Richard E. Thompson, pilot, and Lieut. Harold E. Weeks, aid. They landed near Ridgetown, Ont., a distance of 690 miles. Third in the competition was "Good-year II," Ralph H. Upson, pilot, and W. T. Vann Ormann, aid, with a landing near Amherst, Ont., a distance of 620 miles. The fourth was the U. S. Navy Balloon, Lieut. Raabe Emerson, pilot, and Lieut. Frank Sloman, aid, which landed near Graytown, Ohio, 610 miles. The fifth balloon had as its pilot J. S. McKibben, and Allen O'Neill as aid, landing near Vanwert, Ohio, 550 miles away. The sixth balloon, "Ohio," had Warren Rasor as pilot and Herbert Rasor as aid, and landed near Grayville, Ill., 350 miles distant. Seventh was U. S. Army Balloon No. 4, Capt. Dale Mabry, pilot, and Lieut. G. W. McEntyre, aid, and it landed near Lewisport, Ky., 300 miles. The eighth balloon, with R. F. Donaldson as pilot, and C. T. King as aid, landed near Owensboro, Ky., 300 miles. Ninth came the balloon "Elsie Delight," A. Leo Stevens, pilot, E. B. Weston, aid, landing near Drakesboro, Ky., 280 miles. Tenth was U. S. Army Balloon No. 2, pilot Lieut. Byron T. Burt, aid Lieut. R. M. Olmstead, landing near Hanson, Ky., 275 miles. The eleventh balloon, with pilot Bernard Von Hoffman, landed near Caneyville, Ky., 275 miles.

FLIGHT OF NAVY BALLOON A-5598. A free balloon flight that aroused considerable interest towards the end of the year was that of the U. S. navy spherical balloon or aërostat, A-5598, which left the naval air station, Rockaway Point, N. Y., on December 13, 1920, in charge of Lieut. Walter Hinton, a veteran of the Transatlantic flight of 1919 in NC-4, with Lieutenants Louis A. Kloor and Stephen A. Farrel as associates. On leaving Rockaway the balloon went in a northerly direction and was last reported as sighted eight hours later on the night of its departure at Wells, N. Y., and while there were rumors of its being seen at other places nothing was heard positively until a dispatch came through several weeks later announcing the descent of the balloon in the St. James Bay District of Ontario, about 800 miles from the point of ascent and in a direction slightly west of north. At the time the balloon started there was only a fresh breeze blowing but as it proceeded north the wind freshened so that a gale was blowing by the time northern New York was reached. In reporting their safe descent the officers in charge stated that they were driven by a storm, late on December 13th, west by north, at lower Hudson Bay, and were forced to land 2 P.M., 12-14, about ten miles north by east of Moose Factory, Ontario, at latitude 51.50, longitude 81.00. The party of three was lost in the forest four days, but finally reached safety and

food at a Hudson Bay Co. post. The only available means of transportation to railroad was by dog sled, requiring about nine days.

Various searching parties had been organized to look for the missing balloon and considerable interest was aroused by its flight.

AIRPLANE PHOTOGRAPHY. During the world war airplane photography was highly developed by the aerial observers and military engineers of the various armies so that much in the way of practical experience to be used in water and land surveying and mapping was available at the close of hostilities. There were carried on in 1919 and 1920 by the U. S. Coast and Geodetic Survey in cooperation with the military and naval air services elaborate trials of the new methods and it was stated that with proper development this manner of surveying was of the greatest advantage for the rapidity, economy and minuteness of detail thus secured. In fact aerial photography made possible an early and complete revision of the shore topography in the Coast Survey Charts, and tests made along the New Jersey coast with various instruments and methods showed how readily and economically this could be done, especially on a coast where the shore line is subject to frequent changes due to the action of the sea. Experiments were also carried on in the field of aerial photo-hydrography, where conditions were much more difficult than in merely securing topography data. In the existing state of photography the results are not as promising and the photographs made from the air in the experiments supplied little positive information either as regards depths or bottoms that would give hope for the elimination of field work. However future developments in photography might result in improvements that would furnish comparative, positive, and critical data comparable with that obtained by ordinary sounding. This last work was undertaken on the Florida coast where the waters are clear and where it is desired to mark the small coral heads and pinnacles that are such a danger to navigation.

THE U. S. AERIAL MAIL SERVICE. In his *Annual Report* to Congress, Postmaster Burleson claimed that the Aerial Mail Service had operated during the year with increased efficiency, increased saving in car space, and greater expedition of the mail through the extension of the mail to additional commercial centres. He stated that there were on hand in the United States thousands of planes obsolete for military purposes but which could be adapted to the carrying of the mails and which would be ultimately rendered useless through deterioration in storage if not put into service by the Post Office Department. Mr. Burleson referred particularly to the creation of types to carry greater loads at less expense and with longer cruising radius, so as to eliminate intermediate stops for gassing. The greatest advance in this direction, he stated, had been made in Germany, and the Post Office Department, together with other governmental activities, had purchased some of these imported planes for thorough testing in daily operation. The planes were all metal, built of a light aluminum alloy, and would carry 1000 pounds commercial load with 240-horse power motor. They had a cruising radius of six to seven hours on low-grade fuel, as against the salvaged war planes in the

Mail Service which carried 400 pounds of mail with 400-horse power engine and had a cruising radius of three hours with high-test gasoline.

Mr. Burleson believed that such new types of airplanes offered a solution for commercial work by reducing the cost of operation probably 50 per cent. Their introduction into the United States already had turned the attention of American manufacturers to the building of planes of greater economy of operation, and their tests by the air mail had furnished information that would enable the Post Office Department to utilize some additional discarded war-training planes. The salvaged war planes being prepared for the mail service would carry 600 pounds of mail with 240-horse power motor and have a cruising radius of five hours. The utilization of these planes would cut the operating cost about 40 per cent.

Postmaster-General Burleson also reported that in addition to the direct operation of the transcontinental air-mail route, referred to below, and its feeder lines, the Post Office Department had let a contract for carrying the mail by seaplane between Key West and Havana and by land plane on the following three routes:

(A) Between New York and Atlanta, via Washington, Raleigh, and Columbia, a distance of 815 miles.

(B) Between Pittsburgh and St. Louis, via Columbus, Cincinnati, and Indianapolis, a distance of 600 miles.

(C) Between New York and Chicago, via Harrisburg, Pittsburgh, and Fort Wayne, a distance of 735 miles.

It was claimed that the mail in each of these cases would be expedited by from 12 to 16 hours, and the contracts for the land routes on advertisements for bids were let at prices within the amounts that would be saved on transportation of these mails by railways. A contract was let from October 15, 1920, to June 30, 1921, for an airplane mail route from Seattle to Victoria, British Columbia, to connect with the steamer leaving Vancouver on the previous day for the dispatch of between 12,000 and 14,000 letters to the Orient with a saving of time equal to the elapsed time before the departure of another steamer.

The Post Office authorities found that the establishment of air mail routes would result in a great saving of time but in many cases the cost of transportation would be greater than by train. The Postmaster General recommended that in the interest of improved service the law should be amended so as to permit the making of contracts for carrying mail by airplane, even at increased cost over train service, considering the commercial benefits to be derived from the greater expedition of mail. In addition to amending the law so as to permit of a more liberal contract service Mr. Burleson urgently recommended that the system of government air routes be extended as follows: Boston to Detroit, via Buffalo; Chicago to Los Angeles, via Kansas City; St. Paul-Minneapolis to Seattle; and St. Louis to New Orleans, via Memphis.

Congress, however, had provided in its legislation that the cost of transporting mail by airplane must not exceed the expense of train carrying and this restriction, it was claimed, prevented

the expediting of the mail over a number of important proposed commercial routes.

In connection with considerable advance made in the aerial mail service in 1920, it may be remembered that regular service had been carried on only since May 15, 1918. The first route was between New York and Washington, a distance of 218 miles. The routes between Cleveland and Chicago, and New York and Cleveland, were established in 1919, the route between Chicago and Omaha on May 15, 1920, the route between Chicago and St. Louis on August 16, 1920, and the route between Chicago and Minneapolis on September 1, 1920. In the two years and three and a half months ended September 1, 1920, the U. S. Air Mail operations covered 957,108 miles of flying. In that time it carried 38,027,440 letters. The cost of operation, including interest on investment, total or partial wrecking of planes, replacements of damage to planes, death and injury compensation, etc., had been \$1,147,926.26 for 2¼ years, or \$1.18 per mile. More than one-third of this cost of operation was not cash expenditure but represented the original cost to the army and navy of surplus war material which the Post Office Department put to use in carrying the mails. By the aerial service first-class mail had been advanced in delivery to the public 18 to 24 hours. At the end of 1920 there were about 35 mail planes in the air each day.

TRANS-CONTINENTAL AERIAL MAIL. The first trans-continental aerial mail flight, marking the inauguration of regular service, began on September 8th, when a mail-carrying airplane left Mineola Field, New York. The trip was completed when airplane No. 151 of the United States Aerial Mail Service landed at Marina Field, near the Presidio, San Francisco, on September 11th. The last 250 miles of the trip from Reno, Nevada, were accomplished in one hour and fifty-eight minutes, and thereby broke all previous records for the same distance. As soon as the pilot landed, the six bags of mail were put on an automobile truck for distribution at the main post office at San Francisco. Two bags of aerial mail left were forwarded on the four o'clock train for Washington, and one for Oregon, while the other three remained in California.

On September 10th, the first transcontinental postal airplane for the East, with 700 pounds of mail, cleared from the Marina Field, San Francisco, at 6.15 A.M., being due to arrive in Salt Lake at 3.31 P.M., mountain time, the same day, and at the Mineola Field, New York, at 4 P.M., September 12.

With the inauguration of the through Trans-continental Air Mail the American Air Mail Service was extended over 1463 miles of new territory, with the practical advantage of reducing the transit time of mails between New York and San Francisco from 91 hours to 57 hours in the winter months, and to 54 hours in the summer. Preparations were being made for night flying over the plains between Chicago and Cheyenne, and this would reduce the time of transit of the Air Mail to 45 hours against 91 hours by rail.

The Trans-continental Air Mail Service as arranged during 1920 started daily from New York and San Francisco simultaneously at 5.30 A.M. local time on the summer schedule, and 6.30 A.M. winter basis. The equipment con-

sisted of J. L. metal monoplanes with a cruising radius of 10 hours at 90 miles an hour between New York and Omaha, flying with a single stop for gassing at Chicago, and of De Haviland-4 planes for the remainder of the trip. These airplanes with four hours' fuel and oil, at 80 miles per hour, were used between Omaha and San Francisco, and gassing stations were provided approximately 200 miles apart.

As showing the satisfactory progress made in actual flying in the air mail service it may be stated that on December 2nd all records for flying between Chicago and New York were broken. On the eastern trip J. T. Cristensen, leaving Chicago at 6.55 A.M., flew to Cleveland, 319 miles, at the rate of 117 miles per hour, and W. L. Smith flew from Cleveland to New York at the rate of 151 miles per hour, arriving there at 1.25 P.M. The actual flying time between Chicago and New York, 742 miles in a direct line, was 5 hours and 31 minutes, and an average speed of 131 miles an hour was maintained. The fastest train time was 20 hours. In these flights De Haviland single-motored planes were employed, a change of plane being made at Cleveland.

HELICOPTERS. This type of machine for aerial flight, where lifting screw propellers revolve about a vertical axis, the idea of which dates back to the time of Leonardo da Vinci, attracted interest during the year 1920 in both America and Europe. Experiments continued on the Hewitt-Crocker Helicopter, referred to in the *YEAR BOOK* for 1919 under *Aeronautics*, and on August 24, 1920, U. S. patents Nos. 1,350,454, 1,350,455, and 1,350,456 were issued. The inventors claimed that a lift of more than 20 lbs. per horse power was obtained in their experimental machine and that this was adequate to make the helicopter successful for general as well as special aerial service. The experiments described in some detail will be found in the *Aerial Age Weekly* for Nov. 22 and Nov. 29, 1920.

Experiments with the Helicopter were not confined to the United States and late in the year it was announced that a machine on which Mr. Louis Brennan, the inventor of the mono-rail gyroscopic train, has been experimenting at Farnborough, with the aid of the British government, for more than a year was to be officially tested.

It was rumored that Mr. Brennan would receive an unprecedented reward if his invention proves successful.

With such work in progress it was not strange that when a French inventor, M. Demblanc, read a paper on the helicopter before the British Royal Aeronautical Society it should arouse much interest. Mr. Demblanc stated that increased safety would be secured inasmuch as in case of engine trouble the propellers could be detached to operate as an air brake. In addition experiments on helicopters with government aid were reported from Italy.

AEROPLANE. See *AERONAUTICS*.

AEROSTAT. See *AERONAUTICS*.

AFGHANISTAN. A country of Asia between parallels 29° and 38° north latitude and 61° and 72° east longitude, with a long narrow strip extending to 75° east longitude. On the west is Persia, on the east tribal districts under the Government of India, on the north Russian territory and Bokhara, and on the south

British Baluchistan. The boundaries on the east and south, however, are uncertain, though the basis of settlement in respect to them was reached in 1893. The area is estimated at 245,000 square miles, and the population at 6,380,500. Capital, Kabul, with a population of about 160,000. Other large cities: Kandahar (31,500) and Herat (20,000). The dominant race is the Afghan, whose two chief tribes are the Durrani and the Ghilzais, the total number being variously estimated at from 2,200,000 to 3,200,000. Lesser groups are the Tajik, Hazara, Aimak and Uzbek. The languages are Persian and Pushtoo and the predominant religion is Islam, most of the people and the ruler belonging to the Sunni division of Mohammedans. Despite the wide extent of mountainous country, there is a considerable area of cultivation, the numerous plains and valleys being very fertile. Agriculture and grazing are the chief occupations. There are two harvests. The chief products are wheat, barley, millet and other grains; a great variety of fruits which are produced in abundance and also a plentiful growth of the castor-oil plant, madder and the asafoetida plant. Fruits supply the food of the people and are to a considerable extent exported. The raising of sheep is very important. There is an abundant and singular variety of fat-tailed native sheep, the tail being of immense size and weight and containing large stores of fat. This sheep supplies the chief meat diet and abundant grease which is used as a substitute for butter, while the wool and skin are used for the making of wearing apparel and are also exported in considerable quantities. The mineral wealth includes copper, lead, iron, gold, and precious stones. The copper is reported to be abundant in the north. The lead deposits are scattered throughout the country. Other industries include the production of silks, carpets, felts and goods of camels' and goats' hair. In addition to these which are the chief industries, there are other manufactures for local consumption and for the army, and there is a considerable manufacture of sheepskin coats. According to Indian statistics in 1918-19 the exports into India were £1,194,000 and the imports from India were £2,020,000. The imports and exports from and to Bokhara were reported to amount on the average, respectively, to about 4,000,000 rubles. The trade with India showed a steady increase since 1914-15, owing chiefly to the removal of the heavy duties which formerly restricted it. There have been no railways and commerce takes the line of certain routes which admit only transport by camel and other pack animals, and there are scant means of water communication. Afghanistan is under a monarchy, the executive power being in the hands of the Ameer, an hereditary prince who formerly received a subsidy from the Government of India, under the treaty of 1893, but owing to the developments during the war, it was discontinued. By the peace treaty its arrears were confiscated and no further subsidy was to be granted. The total revenue has been placed at between 12,000,000 and 13,000,000 rupees, which is probably an underestimate. There is a regular army, which is supplemented by levies. Its strength has been placed at 98,000, including 18,000 cavalry and 396 guns, but this is an old estimate and there are no means for determining the precise strength at

present. The control of foreign policy is entirely in the hands of the British Government of India. The ruler in 1920 was Amanullah Khan, who came to the throne on the assassination of his father, Habibullah Khan, Feb. 20, 1919. He was born June 1, 1892.

AFRICA. For discussion, see articles on the respective countries and territories of Africa, including ABYSSINIA, EGYPT, MOROCCO, ALGERIA, TUNIS, SUDAN, BRITISH EAST AFRICA, SOUTH AFRICA, UNION OF, etc.; also ANTHROPOLOGY and EXPLORATION.

AFRICAN METHODIST EPISCOPAL CHURCH. See METHODISTS, COLORED.

AGRICULTURAL COLLEGES. See AGRICULTURAL EDUCATION.

AGRICULTURAL CREDIT. See AGRICULTURE.

AGRICULTURAL EDUCATION. During the year 1920 the agricultural colleges of the United States began to resume somewhat of a normal status which had been rather noticeably affected during the World War. The enrolment of students had been restored to more than normal, in many instances far exceeding that of any previous year. The University of Minnesota reported that the College of Agriculture had an attendance of 650, while the school of agriculture had registered fully 700 as compared with 250 a year before. The Oregon College reported that the registration of the school of agriculture during the past year was almost 100 per cent greater than ever before. The entering class at the Kansas College exceeded that of any previous year. The Georgia College enrolled the largest number of students in the history of the institution. Relative increases are noted in other institutions of this character. There was, however, an alarming condition in the personnel of the faculty of the agricultural colleges, many of the best men and their assistants having gone into commercial or other positions. There were few men in training to fill their places. Low salaries in the colleges and experiment stations, the small increases which were offered to offset the greatly changed scale of living cost, and the increased demand for experts in industries were responsible in part for this situation. Many of the States have begun to see the inevitable result of this practice, and State legislatures have provided for increased appropriations for instruction, enlargement of the faculty and substantial increases in salaries.

To the New York College of Agriculture at Cornell University was granted the largest appropriation ever granted any State college of agriculture. It received an increase of \$300,000 over the previous year for salaries and running expenses, \$500,000 being immediately available for new buildings, while \$2,500,000 more was authorized under the building plan. The total State appropriation for the college for the year would come to about \$1,800,000.

The Louisiana legislature made a tax levy on the natural resources of the State which according to estimates would yield about \$3,000,000 per annum. While a portion of this fund went to the support of various State institutions, it was estimated that about \$1,000,000 was for the development of the College of Agriculture.

The State legislature of Maryland recently enacted a law combining the Maryland State

College of Agriculture with the University of Maryland School of Medicine under the name of the University of Maryland. An appropriation of \$42,500 per annum was made for the medical school for the ensuing biennium, and \$186,476 for 1921 and \$165,416 for 1922 for the other departments of the university, while \$203,000 was provided for buildings and equipment. A new agricultural building was erected at the University of Tennessee costing approximately \$250,000.

The report of a subcommittee on college instruction in agriculture, issued by the Bureau of Education, indicated progress in the improvement of the four-year course for agricultural students. Many agricultural colleges were planning extensive changes in the agricultural curriculum; entrance requirements were being modified; certain alterations in the elective system were under advisement and considerable attention was being given to improvement in college teaching and the equipment for this work. Among the influences found to be affecting this movement was a desire that the institution should be fully of standard college grade; to train students to meet more fully the requirements of the particular pursuits for which they were preparing; to meet new conditions in the secondary schools; to improve and strengthen the college and its relations with the preparatory schools; to observe the limitations of field practice, visual instruction, lectures, text, etc.; to test the new views of educators with regard to the development of instruction in the fundamental and related sciences from courses in practical agriculture so constituted as to create a desire in the student to know underlying facts and principles and to lead him on to study of the sciences, rather than beginning with sciences and basing instruction in agriculture on the scientific facts and principles previously acquired by the student; and to broaden the agricultural curriculum to include not only agricultural production, but also rural economics and sociology and for certain students, pedagogical training.

There was general agreement among the college authorities interviewed that during the first two years in college students should be required to take general basic courses, including a technical knowledge of what the farmer needs to know in order to carry on his work intelligently. The specialization through group courses could be undertaken at the beginning of the junior year. A great variety of arrangements in the curricula of the colleges was found as regards required and group courses and free electives. In general, a considerable limitation was placed on the student's choice of studies. The group elective system is quite common. Under this system the student is required at a certain period in his course to decide on his major subject, usually with advice from the faculty.

The committee deemed it advisable that there should be in the organization of these colleges a general officer, subordinate to the dean, who would act as a supervisor of teaching and be of coördinate rank with the directors of the experiment station and extension work. Some progress has already been made in this direction.

At the agricultural college of California, under new plans effective with the opening of the

1920 session, fewer subjects were required of all students, some work in agriculture being offered each semester and a closer relation established between the subject matter in the fundamental sciences and in agriculture. Three new courses dealing in a broad way with general principles in agronomy, animal husbandry, and horticulture, respectively, were added as electives. A new required course in botany was to be offered in which plant physiology would be emphasized, and changes would be made in the subject matter of the courses in zoölogy, agronomy, animal husbandry, and horticulture. The College of Agriculture of the University of Missouri organized a department of rural life in which were offered the subjects of rural economics, rural sociology and farm management.

Owing to the demand for colored county agents and teachers of agriculture since the passage of the Smith-Lever and Smith-Hughes Acts, an agricultural course of college grade was introduced at the Hampton Normal and Agricultural Institute, beginning September, 1920. Fifteen units of secondary work and two years of actual farm life and experience are required for entrance. The new course requires three years of 12 months each instead of four years of nine months each.

VOCATIONAL AGRICULTURAL EDUCATION. Encouraging progress in the development of vocational agricultural education during the year was evidenced by liberal State appropriations, the largely increased number of schools offering courses in vocational agriculture, and a deeper interest on the part of the students taking this work. The several States were taking active interest in vocational agricultural education.

During the past year 36 States employed full-time State supervisors; 12 States employed supervisors for part time, the increase in the number of supervisors over the previous year was 16. The total fund allotted for 1920 to the States for vocational agriculture was \$889,886.31. There were 1375 all-day vocational centres, having a total enrolment of 31,301 pupils. There were also a number of short course centres and evening classes comprising a total enrolment of about 4000 pupils. The number of teachers of vocational courses in agricultural schools was 1570. There was a shortage of teachers for vocational agriculture and with the constant changing of teachers each year it seemed evident that special attention should be devoted to the training of teachers for this kind of service.

In 1920 there were 64 institutions giving courses in teacher training for vocational agriculture, through 393 teachers and to 2310 students. In most instances the required qualifications of teachers of vocational agriculture were graduation from a four-year college course in a standard agriculture college and a certain amount of practical farm experience. Not all States have been able to maintain the above standard owing to a shortage of teachers for this type of work. The amount of Federal money expended by the States for teacher training for agriculture for the year ended June 30, 1920, was \$250,664.24.

The land-grant colleges in order to carry out the provisions of the Smith-Hughes Act were making progress in building up efficient departments of agricultural education. They had also assisted secondary schools in planning and

developing vocational courses in agriculture, in preparing subject matter, and in training teachers.

ELEMENTARY AGRICULTURAL EDUCATION. Progress is evidenced in the teaching of agriculture in elementary schools. In a number of States special appropriations had been made for rural schools. Many States now employ a full time State Supervisor for these schools. Consolidation of small rural schools in one central school has contributed a great deal toward solving problems of rural education. In the consolidated schools better facilities are provided for teaching agriculture, as well as other subjects, higher salaries can usually be paid teachers and, as a rule, more competent teachers may be procured. Many of the normal schools are offering special courses for training teachers of agriculture for rural elementary schools. Some of the agricultural high schools are also offering training courses of this kind.

The rural school curriculum is gradually becoming enriched with new material. The subject matter is more attractive to pupils. We are beginning to see that the rural school course of study should be based on what rural people ought to know. The basic subjects taught in the rural school should not differ greatly from those taught in the city school except that they should be made more applicable to farm life.

AGRICULTURAL TRAINING FOR DISABLED EX-SERVICE MEN. Pursuant to the law of June 27, 1918, with regard to the formulation of a programme of the Federal government for Vocational Rehabilitation of our disabled soldiers, sailors, and marines, it is encouraging to learn that much has been accomplished in training these men in agricultural as well as in other pursuits. According to the Federal Board for Vocational Education, the number of disabled soldiers reported as having entered some line of agricultural training to June 30, 1920, was 5397, but nearly 1000 men, classified under other headings, might be included as taking agricultural training in connection with training in other lines of study. A large percentage of the agricultural men come from rural communities and are of low educational grade. They are placed in guidance schools in elementary branches including agriculture and, although recorded as prevocational students, it seems safe to estimate that more than 25 per cent of them in prevocational work are agricultural trainees.

The Board had no schools of its own. It utilized during the fiscal year approximately 1700 educational institutions; arrangements had also been made in over 8000 shops, mills, factories, and other business places to train men in and on the job.

AGRICULTURAL EXPERIMENT STATIONS. Lack of adequate funds bore heavily on the experiment stations in the United States in 1920. During the six years from 1914 to 1920 their appropriations increased but slightly, in the case of many of them not at all, and the high costs of maintenance made any considerable expansion impossible for the most part. It became evident during the year that if the stations were to fill their proper place and keep pace with the development of institutions for teaching and for agricultural extension work among the farmers, they must receive more ample support. This was shown to be necessary not only that they might continue to grow but

that they might be able to hold their efficient investigators and attract competently trained persons to that field. Toward the close of the year steps were inaugurated to seek larger appropriations from the Federal government, and many of the States were asked to increase their allotments to the stations.

There were many losses from the working forces of the stations, and in eight States the directorship changed during the year. Several new stations were opened or were provided for.

Under authority granted by the Georgia legislature in August, 1918, a station was established during the year at Tifton, the town contributing a tract of 200 acres and \$25,000 for buildings, land clearing, and maintenance. A deciduous fruit station was established at Mountain View in the Santa Clara Valley, Cal., as a part of the field activities in pomology of the central station, for which the last legislature appropriated \$100,000 for the biennium. In Louisiana the legislature provided \$10,000 for a fruit and truck experiment station to be located in the trucking region of the State. Local parties have offered to provide the necessary land. The Louisiana Sugar Planters' Association has purchased a tract of land which it has offered to the State for the use of the Louisiana Sugar Station, now located on rented land in a city park. A tract of land near Fresno, Cal., has been set aside for a fig experiment station, to be devoted primarily to experiments in fig culture. The Virginia Truck Station, carried on for some years at Norfolk with contributed funds, has been taken over by the State, the land on which it is located being donated by the local truckers' association and increased appropriation granted by the legislature. The Pennsylvania Institute of Animal Nutrition has received a grant of \$5000 from the Rockefeller Institute for Medical Research in furtherance of its work.

A crop protection institute has been organized as a cooperative undertaking by a group of investigators of plant diseases and insect pests in association with representatives of leading industrial concerns engaged in manufacturing spraying and similar materials for combating crop enemies. The institute was organized with the advice and assistance of the National Research Council. The industrial concerns will provide the means for research in lines approved by the representatives of scientific societies on the institute's board of trustees.

The State of Minas Geraes, Brazil, has determined upon the establishment of an institution for agricultural investigation and teaching, and Prof. P. H. Rolfs, for 15 years director of the Florida Experiment Station, has been appointed to organize and conduct the new institution. An agricultural experiment station has been opened at Haina, San Domingo, with a view to promoting its agricultural interests. Several tracts of land have been accepted by the Cuban Department of Agriculture to be used for establishing breeding stations for horses, mules, cattle, and hogs. The Paraguayan government has ceded to the stockmen's society a tract of land for an experiment station devoted to livestock improvement.

The British Parliament has provided for a large increase in agricultural investigation, voting about £80,000 to the Ministry of Agricul-

ture for the maintenance of agricultural research, the bulk of which will be allotted to the various research institutions throughout the country. The war brought home the importance of fundamental research as "the only solid basis of industrial progress" and the necessity of offering sufficiently attractive emoluments to research workers to build up an adequate service. As a means of recruiting the research service, the Ministry of Agriculture has resumed the research scholarship scheme which was in operation before the war.

The Royal Agricultural Society of England has decided on account of its financial condition and the necessity for retrenchment to discontinue the experimental farm at Woburn on the estate of the Duke of Bedford, which has been under way since 1876. The Woburn experimental fruit farm, also on the estate of the Duke of Bedford and maintained through his benevolence for the past 25 years, has as a result of changed economic conditions been taken charge of by the Ministry of Agriculture and is to be continued on practically the same lines as heretofore. It is being maintained with a grant from the development fund, and has been placed under the supervision of the Rothamsted experimental station. A new laboratory building has been completed at the latter station quite largely with funds contributed by private subscription, and plans are under way for a special building for the use of the new Department of Plant Pathology and Entomology.

The British Ministry of Agriculture has purchased an estate of over 1500 acres of typical heath land in Norfolk, to be used as a national demonstration farm to show what can be done with such land by modern methods. Tobacco growing on a comparatively large scale will be one of the features of the experiment.

An institute for research in animal nutrition has been organized in connection with the University of Aberdeen and the North of Scotland College of Agriculture, under the name of the Rowett Research Institute, in honor of John Quiller Rowett, who contributed £10,000 toward the endowment of £25,000 which it is hoped to raise. The establishment of this institute is regarded as an important development in the field of agricultural research. The matter of agricultural research in the British colonies has been receiving attention and a committee has been appointed to consider whether the staff of the agricultural departments in the Colonial service is adequate and to make recommendation for their strengthening.

An Institute of Nutrition has been established at Amsterdam, Holland, under the leadership of Dr. E. C. van Leersum. Funds for buildings have been contributed from private sources and an appropriation for maintenance has been made by the government. It is reported that the Italian government has provided for the establishment at Bergemo of an experimental farm devoted to improving the culture of maize. The East African Protectorate, in connection with a scheme for the exploration and development of the resources of that country, has provided for a series of equatorial experiment stations, to be located at intervals of 1000 feet in altitude from sea level to 9000 feet.

Experimental work in agriculture and horticulture has been inaugurated on a considerable scale in the University of Nanking, China, in-

cluding the improvement of rice, wheat, and corn, culture experiments with cotton, sericulture work, etc.

AGRICULTURAL EXTENSION WORK. During 1920 the Coöperative Extension Work in agriculture and home economics carried on in all the States by the United States Department of Agriculture and the State agricultural colleges under the Smith-Lever Act of May 8, 1914, and related Federal and State legislation, settled down quite fully to a peace basis. It continued to receive in large measure the active support of the farming people, who evidently have come to consider this system of popular and practical education as a permanent factor in promoting better conditions in agriculture and country life. The high cost of personal service, travel and supplies, together with the inadequate supply of properly trained men and women, prevented expansion of the work, though the available funds were considerably increased as compared with those of the previous year. Special attention was given to marketing and other economic matters but problems connected with agricultural production, farm machinery and buildings, plant and animal diseases, farm and home sanitation, food and diet (particularly of children), clothing, home equipment and management also received much attention.

Special attention was given to the work among the farm women in order that it might be established on a permanent basis and meet the real needs of the rural homes. This was necessary because much of the work with women during the war had been distinctly of an emergency character, relating very largely to the conservation of food and the use of unusual foodstuffs. This work had been maintained so largely with emergency funds that when those were withdrawn many of the communities in which it had been established regarded it as wholly a war service and were therefore either unprepared or unwilling to contribute the funds necessary to the continuance of the home demonstration agents. This was particularly true in the Northern and Western States where for the most part such agents had only been employed as a war measure. In the Southern States where the demonstration work for women and girls had been going on much longer there was general recognition of its value as a permanent extension service. There a large number of the home demonstration agents were continued and only financial inability prevented their continuance in the counties from which they were withdrawn.

To get information concerning the actual status of the farm homes as a basis for the further development of the extension work in home economics, a survey was made of about 10,000 homes in the 33 Northern and Western States. These included a great variety of homes in typical farming communities in a large number of counties. The results of this survey were published by the Department of Agriculture. They show, for example, that the average working day of the farm women is 11 hours and that most of them have no regular vacations. The average farmhouse has eight rooms and is equipped with one or two stoves in addition to the kitchen range. About half the women have to carry into the house the coal or wood to feed these stoves and also keep the fires burning during the day. Even this equip-

ment does not keep the whole house warm as is usual in city houses. About one-third of the homes have running water in at least one room, but only one-fifth have bathtubs. More than one-third of the women have to carry water from wells outside the house. Quite generally the care of kerosene lamps is one of the duties of the farm women. Out-door toilets are used on 85 per cent of the farms. Nearly all the houses are screened. About half of the women have washing machines and carpet sweepers. Over 90 per cent do their own washing, sewing, and bread-making. The sewing-machine is used in most of the farmhouses. Only 15 per cent have power for running machinery in the house, though power is used for farm machinery on nearly half the farms. Of the women **reporting, 36 per cent help with the milking, 25 per cent with the livestock, 81 per cent care for chickens, 56 per cent largely care for the garden, 24 per cent help in the field an average of 6-7 weeks during the year, and 33 per cent make butter to sell. Only 11 per cent of those selling butter and 16 per cent of those selling eggs have the money for their own use. Nearly one-third are keeping home and farm accounts. The farm women are now unable in most cases to have hired help. Only about 14 per cent employ such help and then only for about one-third of the time.**

The comparative isolation of the farm home is shown by its being on the average about six miles distant from the high school, three miles from the church, five miles from the market, five and one-half miles from the doctor, 12 miles from the trained nurse and 14 miles from the hospital. This is overcome to a considerable extent by the use of the telephone in 72 per cent of the homes and of the automobile on 62 per cent of the farms.

This survey indicates that the outstanding problems which the extension service for farm women should deal with are: (1) Shortening the working day of the average farm woman, (2) lessening the amount of heavy manual labor she now performs, (3) bringing about higher standards of comfort and beauty for the farm home, (4) safeguarding the health of the farm family, and especially the health of the mother and growing child, and (5) developing and introducing money-yielding home industries where necessary in order to make needed home improvements. To solve these problems immediate efforts should be made: (1) to introduce improved home equipment, especially running water and power machinery and more efficient methods of household management, including rearrangement of kitchens and installation of better heating systems; (2) to help farm people to understand and apply the laws of nutrition and hygiene, through demonstrations in child care and feeding, food selection for the family, home nursing, and the installation of sanitary improvements; (3) to show farmers and their families that investments promoting the comfort, beauty, health and efficiency of the farm home are wise and productive expenditures and very likely the only means of keeping the young people on the farms.

The movement for the more complete organization of the farming people to support the coöperative extension work and to promote the economic and social interest of agriculture and country life continued in 1920 with increasing

strength. The national organization of farm bureaus, entitled the American Farm Bureau Federation, perfected a permanent organization at Chicago in March and held its second annual meeting at Indianapolis in December. At this meeting 32 State Federations of Farm Bureaus were represented by 65 voting delegates. In 13 other States county farm bureaus have been organized to a greater or less extent and in a number of these States federations are being formed. About 1,500,000 members are enrolled in the county farm bureaus. Women are being more generally welcomed to membership in the farm bureaus and already have representation in State and National federations. In some counties boys and girls may also be members of the farm bureau or through their clubs are closely affiliated with it.

As regards commercial activities the general policy of these organizations is now to commit such activities to separate organizations specially formed for such purposes. The farm bureaus are thus becoming organizations in the field of agriculture analogous to chambers of commerce in their relations to other industries.

In 1920 the American Farm Bureau Federation was largely engaged in organizing and strengthening the county farm bureaus. It also dealt with a number of legislative matters pending in Congress. A study of the problems connected with the transportation of agricultural products was undertaken. A conference of representatives of a number of agricultural organizations led to the appointment of a committee of seventeen members to consider and report on the marketing of grain. Similar committees on the marketing of livestock and vegetable crops are being formed. A bureau of farm economics and statistics was established and coöperation with the Bureau of Crop Estimates and Markets of the Department of Agriculture was begun. A special committee undertook the study of tax problems as related to agriculture. In these and other ways the Federation is attempting to investigate the broad national questions relating to agriculture and country life and to interpret the results of similar studies by governmental agencies to the farmers throughout the United States. The main office of the National Federation was located in Chicago, with a branch office in Washington. Mr. J. R. Howard of Iowa was reelected president of the Federation at the Indianapolis meeting.

During 1920 agricultural agents were employed in the coöperative extension work in about 2000 counties, home demonstration agents in about 800 counties, and paid leaders of boys' and girls' club work in about 300 counties. There were also about 750 extension specialists in the various branches of agriculture and home economics who went out from the agricultural colleges to supplement the work of the county agents. Including the supervisory officers and their assistants, about 5000 persons were engaged in extension work.

In 1919 in the 15 Southern States 246,982 adult farmers conducted demonstrations under the supervision of the county agents on 2,664,723 acres. The largest acreage was with corn, 645,716 acres, with an average yield of 37 bushels per acre, or more than double the average yield of the whole territory. The county agents were especially active in helping to introduce improved livestock and secure the adopting of bet-

ter methods of feeding, care and protection against diseases and pests. Tick eradication was greatly promoted and assistance given in stocking counties released from quarantine with improved cattle. The great growth of coöperative marketing and purchasing in the South has been one of the most marked results of extension work. County agents, assisted by marketing specialists, through demonstrations and by instruction and advice aided local and county associations of farmers in the coöperative selling of all kinds of farm produce and livestock and in the coöperative purchasing of a great variety of farm necessities. The Bureau of Markets and State Department of Agriculture coöperated with the extension division of the agricultural colleges in this activity. The value of the products coöperatively purchased or sold through the coöperative efforts during 1919 was \$34,534,886, representing a saving to the farmers of \$4,547,418 or 13 per cent. In Texas alone coöperative work in cotton grading, classing and stapling together with the information given by extension agencies as to the market value of various grades and staples, gave the farmers increased returns aggregating more than \$1,000,000.

Increased interest was manifested in extension work among the negro population both by the white agents and also by a special force of about 150 negro agents employed in counties with a large negro population. This work was more thoroughly organized and provision was made for its general supervision by two field agents attached to the Washington office. Three conferences of both the white and negro State and Federal leaders were held during the year which resulted in a better understanding of the importance and needs of this work and much encouragement to the workers. The negro agents have not only aided their people along agricultural lines but have also helped to quiet unrest among them due to unwise agitation on economic and social matters.

In the Northern and Western States the county agents made 510,000 farm visits and 1,412,200 farmers called at the agents' offices. They held 81,156 meetings which were attended by 3,580,000 people. About 65,000 demonstrations incident to crop and livestock production were conducted on farms, with a resulting profit due to increased production of over \$19,000,000. Under direction of the agents 218,000 farmers selected the seed corn planted on 7,000,000 acres, 187,000 treated seed wheat or oats for smut. Practice relative to various crops was modified on over 130,000 farms; registered sires were secured for 40,000 farms; 163,000 animals were tested for tuberculosis; 400,000 cattle were treated for blackleg, and farmers and veterinarians vaccinated 1,372,000 hogs for cholera; 853 live-stock breeders' associations with a membership of 28,396 were organized; many live-stock shipping associations were organized and numerous auction sales of live stock were successfully conducted. The irrigation and drainage work planned and promoted by the county agents added to the tillable land of the country an area as large as the State of Connecticut. Over 30,000 farmers kept records of their business on forms furnished by the farm management demonstrators. The value of the coöperative business of farmers' exchanges and coöperative associations organized with the aid of the county agents

amounted to over \$40,000,000 with a saving of about \$5,500,000. These organizations also furnished to farmers 118,891 laborers. Much attention was given to the formation of community groups within the counties. This led in many cases to the working out of definite programmes of agricultural improvement by the farm people themselves and the development of local leaders to carry out those programmes with the assistance of the extension agents.

The work of the county women agents, commonly called "home demonstration agents," while retaining many features of the war-time work relating to food production and conservation, was materially broadened on matters relating to diet, clothing, health, sanitation, household equipment and management, and the social interests of the rural communities. Rural women are thus developing qualities of leadership and aside from membership in local clubs are taking active part along with the men in community groups and county farm bureaus or councils. In 1919 there were in the Southern States 20,323 clubs of rural girls and women, with an enrolment of about 500,000, including nearly 2000 clubs for negro women and girls with a membership of 72,000. Much attention was given to home gardening and poultry work, and the canning of the products for sale or home use. The food, including fruit, vegetables, meat, poultry and fish, canned or otherwise preserved, had an estimated value of over \$12,000,000. Many egg circles were organized and the members taught to grade and pack their eggs and market them coöperatively. Connected with such enterprises were the development of community canneries, drying plants, curb markets, rest rooms, etc. The agents also assisted in the planning or remodeling of farmhouses, rearranging of kitchens to save labor, installing of water, heating and lighting systems; introduction of home-made and purchased labor-saving devices, and beautification of the home and adjacent grounds.

In the Northern and Western States much the same kinds of work were done by the home demonstration agents. Owing to the high cost of many things used in the rural home and the lack of complete help for domestic work different phases of home management were given much attention. Instruction regarding the making of family budgets and the keeping of home and farm accounts by the women was received with much interest. The rearrangement of kitchens and the introduction of labor-saving devices were things accomplished in an increased number of farm homes. Women gave more attention to gardens, poultry and egg production and bee-keeping as means of increasing the family income. Canning as a home industry was also more widely developed. Better child feeding and the more general use of milk and its products in the farmhouse were actively promoted by the home demonstration agents. Home nursing, personal hygiene, and sanitation programmes were more numerous, often with the coöperation of health officers, county nurses and welfare organizations. In several counties in Massachusetts dental clinics in isolated rural communities were held under the auspices of the farm bureaus. In the work relating to the making, repair and conservation of clothing a notable feature was the increased use of the

skill and experience of local leaders. Community enterprises, including among other things coöperative laundries, salvage shops, recreation centres, circulating libraries, magazine circles, clean-up campaigns, improvement of church and school buildings and grounds, were fostered in large measure by the home demonstration agents. Sixty-eight coöperative buying and selling associations, with a membership of about 13,000, were formed in 1919.

In the Northern and Western States 310,115 boys and girls were enrolled in 16,395 clubs and carried on a variety of practical work in gardening, canning, growing corn, potatoes, beans, sugar beets, sorghums, pigs, poultry, sheep, baby-beef, rabbits, and making bread, clothes, etc. Much progress was made in organizing and conducting these clubs on a community basis and fitting their work into the programme adopted by the farm bureaus for the extension work with adults. In addition to the supervision given by the paid State and county club leaders, over 10,000 voluntary community leaders had direct charge of clubs. Farmers and business men are increasingly looking to boys' and girls' club work as the medium through which better practices in farming and home-making may be secured and trained rural leadership developed.

In the Southern States large numbers of girls worked with the women in a variety of projects relating to agricultural production, canning and different phases of home-making, but about 160,000 boys had separate clubs. The total production of these clubs, including those for negro boys, was valued at \$8,000,000. The average yield of corn grown by club members was 48 bushels per acre, as compared with the general average of 21 bushels in the Southern States.

Interest in the club work throughout the country by exhibits of club products and competitive contests by club teams at local, county, State and interstate fairs, encampments, short courses at agricultural colleges, observation trips to different parts of the country, etc.

Extension specialists representing various branches of agriculture and home economics with headquarters at the agricultural colleges were increased in number and their work was more thoroughly organized. They assisted the county agents in handling unusual problems, such as the growing of special crops, improvement of live stock, control of diseases and insect pests of plants and animals, dairying, poultry, marketing, keeping of farm accounts, organizations of coöperative associations, instruction and demonstrations in food and nutrition, clothing, home hygiene and sanitation, household equipment and management, etc. They also aided in the shaping up of the county and State programmes of extension work, prepared numerous publications, answered inquiries, and gave instruction and demonstrations at numerous movable schools, farmers' institutes, and other meetings.

Extension work in Alaska, Hawaii, Porto Rico and Guam continued to be carried on through the Federal experiment stations. Settlers coming into the Tanana and Matanuska Valleys in Alaska have been aided in establishing their agricultural operations on the basis of the experience gained by the experiment stations. Distribution of suitable varieties of seeds to various parts of Alaska was also continued.

Extension agents, permanently located on the islands of Hawaii and Mani continued demonstration work with crops and fertilizers and began to organize boys' and girls' clubs and home demonstration work. In Porto Rico meetings of farmers were held throughout the island, information was disseminated through monthly circulars, demonstrations of dipping cattle to eradicate fever ticks were made, and coöperation of fruit growers was stimulated. In Guam 145 farmers conducted demonstrations with cowpeas, teachers throughout the island were aided in maintaining school gardens, 545 boys and girls were enrolled in clubs, conducted home projects with crops and animals, and made numerous exhibits at an agricultural fair.

Extension work was systematically conducted in Canada, France, Belgium, Spain, India, Burma, and Gold Coast Africa.

In England work was carried on through farmers' institutes, farm schools, local lectures and demonstrations conducted by a county agricultural staff or otherwise. Instruction in cheese-making was given at several hundred centres through courses for from two to four weeks. Over 700 women's institutes were held in England, Scotland, and Wales.

In Italy about 275 itinerant teachers gave instruction in agricultural subjects, including plant and animal production, silkworm and mulberry culture, cheese-making, plant diseases, use of tractors and other farm machinery. The funds for extension work were provided by the government, provinces, and local organizations.

Over 4500 Farmers' Institutes were held in 35 States by the colleges of agriculture, or State Departments of Agriculture, with an attendance of 1,268,000. Many similar meetings were held by the colleges as part of their agricultural extension work.

The general interests of the coöperative extension work throughout the United States continued to be promoted by two extension offices in the States Relations Service of the Department of Agriculture. The work in each State was administered by an Extension Director, with headquarters at the Agricultural College, who was a joint representative of the Department and the College. Under the Director were State Leaders of county agricultural agents, home demonstration agents and boys' and girls' club work.

For the fiscal year beginning July 1, 1920, the total fund available for extension work in the States was about \$16,836,000. Of this about \$1,025,000 was derived from direct appropriations to the States Relations Service, \$175,000 to other bureaus of the Department of Agriculture, \$3,580,000 from the Smith-Lever Act, and \$1,500,000 from the supplementary Federal fund, making the total Federal contribution \$6,280,000. This was met by approximately \$10,536,000 from sources within the States, including \$4,600,000 to offset the regular and supplementary Smith-Lever funds, \$3,727,000 from counties, and \$610,000 from farm bureaus and miscellaneous sources. About \$8,460,000 was used for the demonstrations and other activities of the county agricultural agents. Much of their work bore on problems of the farm home, but \$3,145,000 was allotted to distinctive work in home economics. About \$1,100,000 was used for work among boys and girls, about \$2,918,000 for the tasks of the specialists,

\$950,000 for administration, and \$245,000 for publications.

AGRICULTURAL LEGISLATION. The outstanding development of the year was the growing determination of farmers to play a more influential part in the framing of national policies. This attitude was intensified by the critical situation confronting agriculture as the result of the stupendous shrinkage in the value of farm products following the harvests of the year, and found expression in the formulation of definite legislative programmes by the American Farm Bureau Federation, the National Grange, and other farm organizations. While the year's record of completed legislation was not large, a much greater public realization of the needs of agriculture and its vital importance to the nation was strongly in evidence. The opening of the final session of Congress in December found unusual attention being given to agricultural matters, and several of them were well advanced toward passage by the end of the year.

One of these was a bill designed to assure producers of the right to bargain collectively without liability of prosecution under the various anti-trust laws. It authorized the formation and operation of coöperative agricultural associations, subject to regulation in case of undue price enhancement, attempted monopoly, or other unfair methods of competition. This bill was passed by the House of Representatives, May 31, 1920, and by the Senate December 15th, after amendments placing its administration under the Federal Trade Commission instead of the Secretary of Agriculture. This difference was being adjusted at the close of the year.

A joint resolution was passed December 20th, directing the immediate revival of the activities of the War Finance Corporation suspended in May. The President's veto of this measure was overridden by both the Senate and the House, with substantial majorities. This action was taken with the view of assisting in the financing of the exportation of agricultural and other products to foreign markets by providing special credit facilities. It was hoped that in this way European countries needing foodstuffs and cotton would be able to make purchases, thereby relieving American producers accordingly. An attempt to include in the act either directions or recommendations to the Federal Reserve Board to give greater attention to agricultural requirements in its operations was unsuccessful.

A provision in the annual appropriation act discussed elsewhere (see UNITED STATES DEPARTMENT OF AGRICULTURE) authorized the appointment of a joint congressional committee to investigate the feasibility of short-time rural credit legislation. Several amendments were also adopted to the Federal Farm Loan Act of 1916, operations under which, however, were largely suspended pending a decision by the United States Supreme Court as to its constitutionality.

A bill to create a Federal Live-Stock Commission for the regulation of the packing industry received extended consideration in the Senate, an agreement being reached to vote upon it Jan. 24, 1921. Plans submitted by the principal packing-house concerns themselves for a reorganization of the industry under their agreement of the previous year were rejected by the government. Legislation establishing central markets for perishable food products in all large cities and a Federal licensing system for dealers in such

foods was advocated by the Federal Trade Commission.

Numerous other measures were also receiving attention, including tariff legislation imposing high duties on imports of wheat, corn, rice, potatoes, peas, onions, beans, lemons, cattle and sheep, fresh mutton, wool, cotton, and other farm products instituted by the House, December 22; a bill passed by both Houses empowering the Reclamation Service to develop and sell farms for private owners at their expense; a bill to utilize the government air-nitrate plants for fertilizer manufacture, this being the unfinished business before the Senate at the end of the year; and several bills to prohibit speculation in farm products and to prevent the sale of fabrics containing shoddy as virgin wool. The influence of farm organizations was being vigorously exerted in support of most of these measures. Their opposition, however, was being generally manifested to several other propositions, including wholesale land reclamation projects, the imposition of either sales taxes or land taxes by the federal government, and the revival of "daylight saving."

The legislatures of only 11 States were in session in 1920. In Mississippi a commission was appointed to investigate the feasibility of reclaiming waste and cutover lands. New Jersey passed an act to encourage the formation of coöperative agricultural, dairy, and horticultural associations. Virginia revised its laws for the regulation of commission merchants, while in Connecticut a 1919 law requiring the bonding of milk dealers was held unconstitutional. Rhode Island provided for the voluntary licensing of persons making a business of spraying, pruning, and grafting trees.

New dog laws were adopted in Massachusetts and Virginia, looking toward the development of sheep raising. Kentucky prescribed lower interstate rates on agricultural lime, and Virginia revised its laws regulating the sale of that commodity. Kentucky also defined a legal farm fence, and standardized weights of farm products. Crop liens were further regulated in Virginia and billboards on public roads in Massachusetts.

Agricultural interests were more strongly represented than ever before in Canada, notably in Ontario where the so-called Farmers' Party assumed control of the government. A new feeding-stuffs law and a provision standardizing apple barrels and other fruit containers were the most important Dominion measures to be enacted.

In Europe, legislation naturally centred around reconstruction problems, notably as regards the rehabilitation of devastated areas, relations between landlords and tenants, farm labor, coöperation and credit, and the more adequate representation of agriculture in national affairs. Numerous laws designed to ameliorate the status of the actual tiller of the soil went into effect, ranging in scope from radical confiscations in Soviet Russia and various schemes for breaking up large estates in Germany, Poland, Roumania, and other central European countries, to the comparatively conservative Agricultural Bill under consideration in Great Britain. (See AGRICULTURE.)

The principle of compensation by the State to farmers and other private citizens for war losses was fully recognized in France and Belgium. A law enacted in the latter country late in 1919

allowed land owners either to undertake the work of reconstruction themselves, with eventual reimbursement, or to cede their land to the government for reclamation.

The British Seeds Act of 1920 prohibited the sale or sowing of any seeds containing above a prescribed percentage of weed seeds. This measure becomes effective Aug. 1, 1921.

AGRICULTURE. The year saw a considerable revival of agriculture in the European countries included in the war. Many of those countries were still dependent to a quite large extent on outside production. The difficulties of transportation and particularly the exchange situation, coupled with the inability of some of these countries to buy food, served to continue the food shortage. These same difficulties of exchange reacted unfavorably on the countries having an excess for export.

THE YEAR'S HARVEST IN THE UNITED STATES. The crop season in the United States presented an unusual number of obstacles, many of which were formidable. The spring was late, cold and wet, seriously delaying operations. In only four years of the past 37 was the progress of plowing up to May 1st so backward as in 1920. The labor shortage continued, the supply being approximately 37 per cent short, and wages rose to a point which was appalling to farmers. This with the continued high cost of fertilizers, machinery, and supplies, all of which had greatly increased since 1914, made the hazard unusually large. Altogether the American farmers were confronted in the spring of 1920 with the most difficult situation they had ever experienced. In spite of this, the largest harvest in the history of American agriculture was produced, with a single exception. The combined yields of the 10 principal crops was over 13 per cent above the average for the five years preceding the outbreak of the war. The corn (maize) crop of nearly 3,250,000,000 bushels was unprecedented, representing over four-fifths of the total world production. While the production of wheat, oats, barley, and buckwheat was slightly below the average, the rye crop was considerably larger than the five year average, the rice crop was one-fourth greater than the largest ever before harvested, and the grain sorghum crop was 18 per cent larger than that of the record year of 1919. The potato crop has only been exceeded once and then by a very narrow margin. The sweet potato crop was the largest ever produced and both the tobacco and sugar beet crops considerably exceeded any previous yield, the latter being one-third larger than the highest previous record. Cotton gave the largest crop since 1914, and fully 500,000 bales more than the five year average, while the tame hay crop had only been exceeded twice and the oat crop of more than 1,500,000,000 bushels only three times. Altogether the harvest was an unusual one and greatly exceeded expectations early in the season. (See specific crops.)

WORLD AGRICULTURE IN 1920. Indications pointed to a larger world crop of cereals than in 1919, amounting for the countries for which information was at hand to about 6 per cent for wheat, oats, corn, barley, and rye. In countries normally producing two-thirds of the world's wheat crop the apparent production in 1920 showed a gain of 2 per cent over 1919. While the wheat crop gained more than the population from 1919 to 1920, two prominent exporting countries, Canada and British India, were esti-

mated to have a combined 'crop of 193,000,000 bushels greater than in 1919. The countries normally producing about three-fifths of the world's crop of rice showed an extraordinary gain of 37 per cent over the crop of 1919. The United States, British India, and Egypt, which ordinarily produce about 80 to 85 per cent of the world's cotton had an estimated production 16 per cent larger than that of 1919.

It is interesting to note that in the United States the expansion of area devoted to crops under war conditions, estimated at a little over 10 per cent, was reduced in 1920. Following the armistice there was a reduction in crop acreage, which from 1919 to 1920 represented a decline of 5.4 per cent in the area occupied by 20 principal crops. Apparently the reduction was brought about by returning the land to pastures and discontinuing the use of low grade areas. The contraction in acreage was most extreme in the case of wheat and rye, the principal bread grains, the production of which was particularly stimulated during the war.

The returns for England and Wales show a falling off in area in cereals and an increase in that of clover, rotation grasses, and green crops. The acreage under wheat, 1,877,000, was 344,000 acres less than in 1919 and only 70,000 more than in 1914. There was an equal falling off in oats, but barley increased, the area being the largest since 1904. Potatoes occupied a largely increased area, the largest of record except 1918. Acreage in fallow was much above the pre-war average. A large reduction in the number of cattle and sheep was noted, but an increase in pigs.

In less than two years after the armistice the French people cleared and put under cultivation nearly 50 per cent of the land devastated in the war. Projectiles and the debris of battle were removed from 85 per cent of the farms. It is estimated that the 10 devastated Departments produced in 1920 enough cereals for their own need and possibly more.

Italy continued to fix the price for wheat, making a slight reduction in the basic price. Premiums were paid over and above this for grain produced in the southern provinces and also for wheat produced in excess of that raised in 1918. An increase in local production of bread stuffs at any cost was regarded as more advantageous than to continue importation on the former scale.

It is reported that Germany's importations of grain and feeding stuffs increased during the last generation, although highly improved methods kept her a prominent agrarian nation. Farming has been made more difficult of late by the agricultural labor problem involved with the low wages offered, the support by the Ministry of Agriculture of the idea of a farm laborers federation on the eight hour basis, and the cutting off of labor importation from Russia and Poland. Live stock numbers are short, farmers are said to be slow to accept the government food commission price for grain, large acreages devoted to crops and vineyards have been lost under the terms of the treaty, and there is a conflict of interest between city and rural populations.

PRICE DECLINE OF AGRICULTURAL PRODUCTS. After the farmers had met and solved the problems of production at unusual cost they were confronted at harvest time by a falling market, in midsummer when the farmers' period of out-

lay was nearly at an end and they were ready to dispose of their crops, a sharp decline occurred in the price of practically all farm products, covering nearly everything the farmers had to sell. It did not materially affect the articles they had to buy, for labor and materials used in harvesting were substantially as high as earlier in the season. As a result, a situation was brought about which aroused not only the serious concern but the indignation of farmers, and which it was feared might have serious consequences to agriculture and to the nation.

The effect was especially noticeable in the cereals and cotton. The worst slump in the history of grain prices took place. The drop in the price of wheat was especially sharp. From the high-record price of early summer wheat declined to nearly half, and corn likewise. This was paralyzing to farmers as it meant the selling of their wheat for less than the cost of growing. The average cost of producing the 1919 crop of wheat for the entire United States was estimated by the Department of Agriculture to be \$2.15 a bushel, and as it was not less for the crop of 1920, the average farmer stood to lose his labor and often more. It was charged in many quarters that the decline was due to manipulation, control, or other artificial causes, as well as to the importation of wheat from Canada, whose crop was 100,000,000 bushels larger than in 1919, and whose surplus was early put upon the market. This resulted in Canadian wheat underselling the United States crop from the time the movement started, and at the rate of exchange gave Canadian farmers a good price. Other factors were the world supply and demand for wheat, the partial recovery of European agriculture, and the lack of buying power and decreased consumption in European countries.

The complaint that speculators were responsible for the decline was borne out by the fact that practically all the selling in the future market represented short selling or liquidation of contracts bought from short sellers. The big corn crop and the consequent large fall in its price was another important factor affecting the price of wheat.

The extent of the change is indicated by the relative prices compared with 1919. In the spring and early summer they were from 21 to 24 per cent higher, considering all crops, than for the corresponding period in 1919, but on August 1st they were the same as a year previous, and on September 1st were 7 per cent lower than in 1919. This decline amounted to 14 per cent October 1st, and 28 per cent November 1st, so that on the latter date the prices of all crops were 33 per cent below those prevailing when the farmer planted and bore the cost of production. As a result the year's unusually heavy harvest was calculated as worth \$3,000,000,000 less than the smaller crop of 1919, and \$1,000,000,000 less than the still smaller crop of 1918. Live stock and its products also declined to such an extent as to cause serious losses to producers, the total value of animal products in 1920 being about \$200,000,000 less than in 1919.

The serious nature of the situation was recognized not only by the farmers but by public officials and the press. The condition was regarded as alarming and was commonly spoken of as a crisis. No other industry or business could suffer a similar experience without insolvency, and it was widely estimated that one-quarter of the

farmers of the country were facing bankruptcy unless there should be an early change in the price situation. Loans were being called, farmers and stockmen could not secure needed credit, and all other efforts at relief were unsuccessful. Attempts were made by farmers through their organizations to form combines to hold their products, especially wheat and cotton, and to pledge individual farmers to hold back the sale of their products, but these were not highly effective. Bankers were appealed to through their organizations, and the Secretary of Agriculture urged that they see to it that as far as possible the farmers were properly financed, not only to protect them from unwarranted losses but also to stabilize their business and insure adequate food production in future. A conference of the governors and governors-elect from more than half the States declared the situation to be grave and urged the federal government to create a finance corporation which through loans to foreign countries would stimulate the export of American food stuffs and other products. Proposals of farmers organizations that the war finance board be revived or money loaned to exporting corporations to finance exports met with disapproval from government officials. By the time Congress convened the demand for remedial action had taken quite definite form. Hearings were immediately begun and numerous bills and resolutions introduced. The Congress passed a resolution directing the revival of the war finance corporation to assist in financing the exportation of agricultural and other products for foreign markets. The Senate also considered an amendment to the Sherman Anti-trust Law giving farmers the right of collective bargaining.

An emergency tariff measure was passed in the House near the close of the year. This related wholly to agricultural products, including crops, wool, and live stock, and was proposed to run for 10 months. It fixed import duties which it was thought would serve as a considerable protection to American products.

Meanwhile certain other measures had crystallized into action. Among these was the formation of a \$100,000,000 export credit corporation, proposed at a conference of bankers, agricultural leaders, and manufacturers. This was known as the Foreign Trade Financing Corporation and was sponsored by more than 200 bankers. It was said to have a potential capacity of carrying \$1,000,000,000 worth of business. The Federal International Banking Company was organized in New Orleans with a subscribed capital of \$7,000,000, to assist Southern producers in marketing their surplus products by extending credit to countries desiring it for the purchase of such products. Using the 1920 situation as an illustration, the Federal Department of Agriculture urged the placing of American agriculture on a more satisfactory basis and the stabilizing of the business of farming, not in the interest of the farmer alone but of the nation as a whole. Means for carrying over the surplus from years of high production to periods of low production were suggested to that end, together with more attention to marketing and the development of the latent consumption demand in years of large supply. This would be helped by the establishment of a world market reporting service, which is now lacking.

STIMULATION OF AGRICULTURE IN ENGLAND. Great Britain has been making a pronounced

effort to retain some of the ground it gained during the war in the larger production of home-grown food and if possible to gain more in addition. The Royal Commission of Agriculture appointed in 1919 presented an interim report in which it recommended a continuance of the guaranty of minimum prices for wheat, barley, and oats grown in Great Britain, until Parliament otherwise decides, withdrawal from the arrangement being subject to not less than four years' notice. The proposed guaranties are to be calculated from year to year on the basis of the cost of producing in the preceding year.

The plans of the government for a fixed agricultural policy were embodied in the agricultural bill introduced in Parliament in the spring. These plans did not go as far as had been hoped by many friends of agriculture, and the bill met with considerable severe criticism, especially certain provisions for continued control over the cultivation of land. It is said, however, to be the most favorable measure to the industry ever introduced. The object is to give a greater sense of security to agriculture and to encourage greater enterprise in that direction. While providing for a reasonable profit through guaranteed prices it protects farmers against disastrous loss in engaging in a form of farming involving more risk than live-stock production and which with changing policy in the past has threatened ruin. The Corn Production Act of 1917 is made permanent except that guaranteed prices may be terminated on an order in council by a four years' notice. Control measures exercised through the county councils permit orders for a change in cultivation where not calculated to injure the persons interested, and landlords may be required to execute repairs necessary to secure proper cultivation. A second part of the bill relates to agricultural holdings and tenancy.

Since the armistice the agricultural executive committees have retained all the powers given under the Defense of the Realm regulations but cultivation orders have only been served in extreme cases and attention has been devoted mainly to leveling up and improving the general standard of farming. The county councils still held in their possession about 32,000 acres which they took over during the war, part of which was farmed by them direct and the rest by tenants.

Urging the importance to the country of increased food production, Premier Lloyd George gave an energetic denunciation of the "national weakness, folly, and scandal that £500,000,000 worth of food which could be produced here should be imported." Numerous articles were published by agricultural experts on the practicability of a larger measure of arable farming as compared with grass. Sir Daniel Hall declared that "over a much greater acreage than is now devoted to the crop (wheat) the British farmer is as well placed as any other to meet that need at a profit to himself." Sir Thomas Middleton, of the British Ministry of Agriculture, points out the great opportunity for expansion in wheat growing, stating that while wheat occupies only 4 per cent of the cultivated land of the United Kingdom, wheaten bread accounts for 16 per cent of the stock of home-grown food; hence the land in wheat produces about seven times as much food per acre as that in stock farming. He shows that as a result of the plow policy England and Wales in the last year of the

war, 1918, produced 52 per cent more wheat than in the 10 years preceding the war, 41 per cent more oats, 150 per cent more rye, and 57 per cent more potatoes. The net gain in 1918 represented 1,633,000 tons of human food, to bring which into the country would have required vessels having an aggregate capacity of 2,300,000 shipping tons of 40 cubic feet. To produce the amount of bread-stuffs required by the country and at the same time maintain the present production of milk, beef, and mutton, he estimates would call for 43,000,000 to 45,000,000 acres of arable land, whereas there are less than 47,000,000 acres of cultivated land available altogether. Hence he considers that such a scale of production is clearly impossible. The former director-general of food production in Great Britain also pleads for the more favorable use of land in producing human food and suitable encouragement and insurance on the part of the government.

In an interesting article on "Agriculture During Two Great Wars" (*Journal of the Ministry of Agriculture*, June, 1920), Lord Ernle, former president of the Board of Agriculture, contrasts the state of agriculture in Great Britain during the Napoleonic wars with that during the recent war. He estimates that between 1917 and 1919 the British farmer by his efforts at production saved the tax payers about £25,000,000.

Under an act of Parliament early in the year the British Board of Agriculture and Fisheries succeeded to the status of a first-class department known as the Ministry of Agriculture, with enlarged powers. The act of reorganization set up councils of agriculture for England and Wales and an agricultural advisory committee for both countries. It also established agricultural committees to take over the duties of the county councils pertaining to agricultural affairs. Lord Lee of Fareham became the new Minister of Agriculture and Fisheries. The name of the official organ of the Board of Agriculture was changed to *Journal of the Ministry of Agriculture*. The ministry appointed a woman advisor who will advise as to women to serve on the councils of agriculture, follow the work of the women's institutes, and in general watch over the interests of women in agriculture, which were greatly enlarged by the war.

According to the British Ministry of Agriculture, the total number of cattle per 100 acres in the United Kingdom is only 25 as against 40 in Belgium, 38 in Holland, and 32 in Denmark. There are but 9 dairy cows in the United Kingdom per 100 acres, compared with 20 in Holland and Belgium, 18 in Denmark, and 15 in Sweden; while the number of pigs is 8 in the United Kingdom against 30 in Belgium, 23 in Holland, 21 in Denmark, and 26 in Germany.

AGRICULTURAL CENSUS. Preliminary returns from the 14th census were issued during the year, giving data on the population and number of farms. These show that the trend of population from the country to the city has become greatly accentuated since 1910, and that for the first time in the country's history more than half the entire population is now living in urban territory, as defined by the census bureau; that is, of the 105,683,108 persons enumerated by the 14th census in continental United States, 54,816,209 or 51.9 per cent according to preliminary tabulation are living in incorporated places of 2500 inhabitants or more, and 50,866,899 or 48.1 per cent in

rural territory. Of the latter 9.3 per cent live in towns of less than 2500, and 38.8 per cent in what may be called the country districts; whereas in 1910 the figures were 8.8 per cent and 44.8 per cent respectively.

While the total increase in population since 1910 was 14.9 per cent, there was an increase in the portion living in urban territory equivalent to 28.6 per cent and in that living in rural territory of only 3.1 per cent; that is, the increase in population was over 12,000,000 in urban and only 1,500,000 in rural territory. Furthermore, the portion living in towns of less than 2500 shows an increase of 21.5 per cent, whereas that portion living in purely country districts shows an actual decrease of 250,000.

Statistics have been published by the Department of Agriculture to show that the population of the United States is increasing more rapidly than the food supply. Before the war the population was increasing at the rate of approximately 50 per cent every 20 years and wheat production was keeping up that rate of increase until after 1910, reaching its maximum in the five-year period 1910-14. In that period the United States was exporting only about 150,000,000 bushels of wheat and flour equivalent. With the exception of the year 1920, corn reached its maximum production more than 10 years ago and exports have fallen off to a fraction of what they formerly were. The United States is already importing more food than it is exporting, measured in money value, in the form largely of tea, coffee, tropical fruits, nuts, and sugar. From the statistics of production it has been estimated that at present rates the United States will cease to become a food exporting nation within from 15 to 25 years.

The Secretary of Agriculture makes these facts the text for a plea that everything possible be done to make farming profitable and country life more attractive, pointing out that the history of agriculture indicates that farming is in periodic danger of losing its grip on both capital and workmen and of allowing them to slip away into city industries. He points out that the real concern over the movement of rural population to urban centres is whether those who remain in agriculture are the strong, intelligent, well seasoned families which have characterized the agricultural population in the past. In order to assure this there can be no relaxation of the present movements for a better country life, economic, social, and educational.

The number of farms in the United States in 1920 according to preliminary official figures was 6,459,988, an increase of 98,496 over 1910. During the previous decade the increase was much greater, 624,130. The census definition of a farm is a tract of three acres or more used for agricultural purposes.

As a general rule the number of farms decreased in the older agricultural States and increased in the newer ones and in some special crop regions. The increase in most of the States is accounted for by the settling up of new territory, by homesteading former public lands, by developing cut-over lands, the division of large farms and plantations, etc. The general tendency toward larger units with the increased use of machinery and the decreasing supply of labor is explained as the reason for the decrease in the number of farms in a considerable number of the Central-Western States. This is not an indi-

cation of decline, as in all the States in which the number of farms has decreased agriculture has advanced.

LAND VALUES. The value of plow land has continued to increase steadily since 1916, the average per acre being 54 per cent higher in 1920 than in 1916. This increase was equivalent to 21 per cent in 1920 over 1919, which marked by far the greatest increase. There was a normal lag in the price of land in relation to crop prices.

Values in the South practically doubled in four years, and the formerly cheap lands in that section are overtaking the higher values of other States. The country-wide land boom reached its maximum in Iowa where considerable land was sold at \$400 an acre. The boom forced prices up to a level at which it was said to be impossible for any but the most exceptional farmers to make over 3 per cent on the capitalization. The increase in that State averaged \$63 from March, 1919, to March, 1920, or 32 per cent. The current high valuation is not justified by the earning power of the land, especially at normal prices for staple farm products. These inflated prices of farm lands are in part responsible for the distress which overtook farmers in the fall of 1920, especially where the land was heavily mortgaged.

INCREASE IN PRODUCTIVE POWER PER MAN. The extent to which the productive power of the farmer has increased, and the high point it has reached as a result of machinery and better farm practice, is shown by data presented by the Department of Agriculture. In the middle of the last century corn production averaged little more than 2 bushels per farmer's work day of 10 hours, when all the work was done by hand. The average rose to 14.5 bushels half a century later when the use of the gang plow, disk harrow, corn planter, self binder, and other machinery came into common use. The hand labor devoted to producing wheat in 1830 resulted in an average of hardly more than three bushels per work day of 10 hours. As a result of improved agricultural methods and machinery one day's labor now averages a production of 60 bushels, or 20 times as much. By using machinery and improvements, the farmer is able to produce 56 bushels of oats on an average by one day's labor of 10 hours, whereas in 1830 with hand labor, his average was 6 bushels, or only one-ninth as much. Similarly, in the case of potatoes the production has been trebled in the past half century, a farmer being able under modern conditions to produce an average of 57 bushels with one day's labor. The case is nearly the same with cotton, where hand labor is still largely employed. Eighty years ago the labor of a man for one day of 10 hours produced 45 pounds of cotton in the seed, whereas it now produces 127 pounds.

These data serve to indicate not only the increased efficiency of the farmer but the high degree which has been reached, greatly exceeding that of the farmer in any other country.

FARM TRACTORS AND TRUCKS. The development of tractor building for farming in the United States is illustrated by the fact that some 330 tractors have been placed on the market by over 200 manufacturers. A national tractor show was held in Kansas City early in 1920, at which 103 models were exhibited by 66 different makers. An outstanding feature was the increase in the number of all-purpose or small general utility tractors and motor cultivators, and

the arrival of the garden tractor. Prices ranged all the way from \$310 to \$5,750.

A journal entitled *Agrimotor* is being published in the interest of the industry. A three-bottom plow drawn by a suitable tractor enables one man to accomplish from 60 to 70 per cent more than a two-bottom plow drawn by six horses. Where the two-row corn cultivator is practicable this machine enables one man to cover nearly twice as much ground per day as with a one-row cultivator.

The growth of the motor truck in connection with farming has been rapid. A survey by the United States Department of Agriculture early in 1920 showed that at least 50,000 farmers in the United States own motor trucks which they use on their farms. The number of horses on farms has shown a decline as tractors, motor trucks, and automobiles have increased. The number of horses reached the maximum in 1913, and since then has been gradually declining. But even so, the Department of Agriculture estimated the total value of horses on farms Jan. 1, 1920, at \$1,993,000,000, or only slightly below that of the milch cows.

INTERNATIONAL INSTITUTE OF AGRICULTURE. The biennial assembly of the Institute was held at Rome in October. Interest centred largely on the prompt reporting of international statistics of crop production and prospects, but among certain of the European representatives much importance was attached to recording measures for the control of plant diseases and injurious insects.

The United States has been without a resident representative at the Institute for the past two years, since the death of Mr. David Lubin. The position is being filled at present by Dean Thomas F. Hunt of the University of California, who is on leave from that institution. The importance of a permanent representative is strongly urged by the American delegates to the assembly.

The Institute has voted to place in its building a tablet in memory of David Lubin, its originator and the American representative from the time of its organization.

MISCELLANEOUS. A department of agriculture and experiment station is being established in Liberia. The various technical and coöperative organizations concerned with agriculture in Denmark have recently organized a central agricultural council, known as the Landbrugsraadet, to promote their common interests. A Canadian Society of Technical Agriculturists has been formed in the interest of workers engaged in the agricultural profession in Canada, and plans to publish a scientific journal. The first meeting of the society was held in Ottawa in June.

Agricultural Engineering has begun publication as the monthly organ of the American Society of Agricultural Engineers. *Farm Engineering*, a quarterly, has also made its appearance.

The Journal of the Department of Agriculture is being issued as the official organ of the Department of Agriculture of the Union of South Africa, replacing a periodical suspended at the beginning of the war. An abstract journal for agriculture (*Zentralblatt für die Gesamte Landwirtschaft*) has begun publication in Germany. It is intended to review the literature in the whole field of agricultural science. *World Agriculture*, the official organ of the American Expeditionary Forces Farmers Club and the World

Agricultural Society, began publication during the year.

BOOKS. Among the books appearing during the year the following may be mentioned: *Agricultural Meteorology*, J. Warren Smith (New York, 1920); the first text-book exclusively devoted to this subject. *The Bases of Agricultural Practice and Economics in the United Provinces*, H. Martin Leake, Director of Agriculture (London, 1920); traces the history of agriculture, gives fundamental facts of agricultural practice and economics, lines along which development is likely, etc. *The Agriculture of Ohio*, issued by the Ohio Experiment Station as Bul. 327; a review of the history of Ohio agriculture from the earliest times with statistics of crop production and descriptions of the principal soil types of the State. *Hand Book of British Breeds of Live Stock* (issued by the Ministry of Agriculture and Fisheries, London, 1920); a revision of this publication descriptive of the principal characteristics of the British breeds of horses, cattle, sheep, and pigs, with brief history of their origin. *Cattle and the Future of Beef Production in England*, by K. J. J. MacKenzie (Cambridge, 1919). *Agricultural Economics*, by H. C. Taylor (New York, 1919); covers the economics of production and marketing and the problems of maintaining and improving the economic and social position of the farmer. *The Nation's Food*, by Raymond Pearl (Philadelphia, 1920); a statistical research relating to the food resources of the United States. *The World's Food Resources*, by J. Russell Smith (New York, 1919); a study of physical, geographic, and economic facts of the world's food supply, the possibility of increase, and adaptation of human consumption to new conditions of production and trade. *Agricultural Prices*, H. A. Wallace (Des Moines, Ia., 1920); a statistical study with discussion of the price registering system on the Chicago Board of Trade, the principles operative in determining prices, ratio of prices to production costs, etc. See also **HORTICULTURE, LIVE STOCK, DAIRYING**, and specific crops.

AGRICULTURE. INTERNATIONAL INSTITUTE OF. See **AGRICULTURE.**

AGRICULTURE, UNITED STATES DEPARTMENT OF. On February 2, 1920, Secretary David Franklin Houston was transferred to the Treasury Department by President Wilson and Edwin Thomas Meredith of Des Moines, Ia., editor and publisher of *Successful Farming*, was appointed Secretary of Agriculture. He gave special attention to explaining to the public, and particularly to business men and other city people, the organization and work of the Department of Agriculture and its relation to the general welfare. Dr. E. D. Ball, head of the Department of Zoölogy in the Iowa State College, was appointed Assistant Secretary of Agriculture, and W. B. Greeley succeeded Henry S. Graves as Chief of the Forest Service.

In his annual report for 1920, Secretary Meredith pointed out the difficulties under which the American farmers produced in 1920 the largest harvest in the history of our agriculture and their great disappointment because these products, obtained at abnormally high cost, would bring at current prices over \$3,000,000,000 less than the smaller crop of 1919. This condition impressed upon farmers the need of more attention to marketing and brought a demand on the Department for broader and more thorough information

PRODUCTION BY COUNTRIES IN 1919 AND 1920 OF WHEAT, RYE, OATS, BARLEY, AND MAIZE IN BUSHELS

	Wheat					Rye			Oats			Barley			Maize	
	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919
United States	789,878,000	934,265,000	69,318,000	88,909,000	1,524,055,000	1,231,754,000	202,024,000	161,845,000	8,232,367,000	2,858,509,000	8,232,367,000	2,858,509,000	8,232,367,000	2,858,509,000	8,232,367,000	2,858,509,000
Canada	289,498,000	193,260,000	12,190,000	10,207,000	543,033,000	394,387,000	64,237,000	56,398,000	13,696,000	16,940,000	13,696,000	16,940,000	13,696,000	16,940,000	13,696,000	16,940,000
Argentina	214,140,000	212,800,000	.....	.....	57,113,000	38,762,000	10,279,000	.....	258,686,000	240,144,000	258,686,000	240,144,000	258,686,000	240,144,000	258,686,000	240,144,000
Chile .....	.....	21,591,000	.....	192,000	.....	3,250,000	.....	3,977,000	.....	1,702,000	.....	3,977,000	.....	1,702,000	.....	3,977,000
Uruguay	5,416,000	6,890,000	.....	.....	1,723,000	1,288,000	.....	.....	.....	.....	2,784,000	.....	.....	.....	2,784,000	.....
Austria .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50,829,000	.....	.....	.....	50,829,000	.....
Czechoslovakia	10,478,000	10,507,000	18,377,000	22,713,000	41,079,000	46,097,000	1,378,000	.....	6,138,000	.....	6,138,000	.....	6,138,000	.....	6,138,000	.....
Belgium	8,799,000	9,895,000	14,824,000	13,681,000	81,389,000	26,920,000	3,808,000	8,617,000	.....	.....	8,617,000	.....	8,617,000	.....	8,617,000	.....
Bulgaria	7,702,000	8,587,000	8,939,000	6,496,000	9,676,000	7,387,000	12,012,000	9,958,000	.....	39,412,000	39,412,000	.....	39,412,000	.....	39,412,000	.....
Denmark .....	.....	5,923,000	.....	14,921,000	.....	47,500,000	.....	23,545,000	.....	.....	23,545,000	.....	23,545,000	.....	23,545,000	.....
France	230,404,000	182,444,000	33,201,000	27,833,000	290,925,000	176,339,000	38,989,000	23,626,000	.....	11,778,000	.....	23,626,000	.....	11,778,000	.....	23,626,000
Germany	88,000,000	79,744,000	193,088,000	222,344,000	237,600,000	247,200,000	88,000,000	83,000,000	.....	.....	83,000,000	.....	83,000,000	.....	83,000,000	.....
Greece	12,874,000	9,693,000	1,308,000	1,081,000	3,996,000	2,749,000	6,897,000	4,820,000	.....	.....	4,820,000	.....	4,820,000	.....	4,820,000	.....
Italy	147,312,000	169,563,000	4,527,000	4,671,000	24,113,000	34,695,000	5,838,000	8,327,000	.....	85,846,000	85,846,000	.....	85,846,000	.....	85,846,000	.....
Netherlands	6,470,000	6,015,000	14,234,000	14,057,000	24,285,000	20,512,000	2,738,000	2,392,000	.....	.....	2,392,000	.....	2,392,000	.....	2,392,000	.....
Norway .....	.....	1,139,000	.....	1,063,000	.....	16,810,000	.....	5,787,000	.....	.....	5,787,000	.....	5,787,000	.....	5,787,000	.....
Portugal .....	.....	1,107,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Romania	66,453,000	50,754,000	.....	.....	.....	14,272,000	.....	.....	.....	94,909,000	.....	.....	.....	94,909,000	.....	.....
Russia .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	134,455,000	138,939,000	32,053,000	23,298,000	89,625,000	82,915,000	85,595,000	74,432,000	.....	24,533,000	24,533,000	.....	24,533,000	.....	24,533,000	.....
Sweden	10,688,000	9,509,000	24,959,000	23,074,000	66,207,000	70,589,000	11,115,000	12,378,000	.....	.....	12,378,000	.....	12,378,000	.....	12,378,000	.....
Switzerland	3,781,000	3,521,000	1,696,000	1,748,000	3,121,000	2,811,000	643,000	629,000	.....	280,000	280,000	.....	280,000	.....	280,000	.....
Turkey .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
United Kingdom .....	.....	71,457,000	.....	.....	.....	210,388,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	376,984,000	280,075,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Japan	28,055,000	29,800,000	.....	.....	11,163,000	9,280,000	92,023,000	91,500,000	.....	.....	91,500,000	.....	91,500,000	.....	91,500,000	.....
Algeria	13,902,000	25,559,000	3,940	.....	5,890,000	18,557,000	9,146,000	24,521,000	.....	243,000	243,000	.....	243,000	.....	243,000	.....
Egypt	27,246,000	30,137,000	.....	.....	.....	.....	7,166,000	9,685,000	.....	.....	9,685,000	.....	9,685,000	.....	9,685,000	.....
Tunis	4,766,000	7,849,000	.....	.....	856,000	3,101,000	3,043,000	6,110,000	.....	197,000	197,000	.....	197,000	.....	197,000	.....
Australia	47,104,000	75,146,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Zealand .....	.....	6,659,000	.....	.....	.....	6,885,000	.....	709,000	.....	.....	709,000	.....	709,000	.....	709,000	.....
Union of South Africa	6,630,000	8,983,000	.....	.....	7,519,000	9,520,000	.....	.....	86,059,000	41,291,000	86,059,000	41,291,000	86,059,000	41,291,000	86,059,000	41,291,000

on the economic problems of agriculture. To meet this situation so far as possible with its present resources, the Department was making a study of marketing conditions at home and abroad through its Bureau of Markets, in co-operation with the agricultural colleges and experiment stations and farmers' organizations. This included the accumulation of fundamental data regarding marketing processes and costs; the dissemination of accurate, disinterested market information; the elimination, wherever practicable, of waste and unnecessary marketing expenses; the development of standards for the grading of farm products and the standardization of containers; the promotion of efficiency in the storing, handling and shipping of farm products; and the regulation of marketing machinery in order to prevent any abuses or sharp practices. Farmers were also being aided in the organization and conduct of coöperative marketing. The consolidation of the Bureaus of Crop Estimates and Markets was recommended to prevent overlapping of work and to combine services in various lines. The enlargement of the crop and live-stock reporting service was strongly urged. The supervision of live-stock markets under the Food Control Act of Aug. 10, 1917, was continued by the Bureau of Markets but was greatly handicapped by lack of funds. The importance of the studies on the cost of production, farm organization, labor, finance, land-ownership, settlement and colonization, and the social problems of country life, was pointed out. "The present universal cry of 'Keep the boy on the farm' can and should be expanded into a great public sentiment for making country life more attractive in every way. Neither force nor exhortation will keep people in the rural districts if they are to be deprived of the benefits of modern social, educational, and other opportunities." Examples were given of the very important service the Department had rendered in controlling plant and animal diseases, insect pests and predatory animals and in helping to improve crop and live-stock production. In its work on the utilization of waste products the Bureau of Chemistry had discovered methods of utilizing corn-cobs so that they may be converted into a variety of highly useful articles.

Under the Federal Good Roads Act in the fiscal year 1920, 1670 projects submitted by the States, involving the improvement of 16,670 miles of roads and an allotment of \$109,830,366 of Federal funds, were approved and 1677 miles were entirely completed. Difficulties connected with transportation, lack of materials, labor, and contractors, and the disposal of road bonds had greatly interfered with road construction. To correlate more fully Federal and State highway agencies, the advisory board was enlarged to include all the officers and executive committee of the Association of State Highways officials. A more thorough classification of highways as a basis for a permanent policy of road development was under consideration. The Federal Road Act will expire June 30, 1921, unless Congress acts to continue it.

The need of a more comprehensive forest policy was urged, which should involve broader coöperation of Federal and State agencies, improved relations of national forests and national parks, utilization of grazing lands, and more comprehensive research on forestry problems.

Amendments were advocated to the Federal

acts relating to meat inspection, virus-serum-toxin, food and drugs, insecticides and fungicides, grain standards, food products inspection, warehouses, plant quarantine, interstate shipment of wild animals or birds, the administration of wild-life reservations. New legislation was recommended relating to commerce in seeds, feeds, fertilizers, naval stores, and marketing of live stock.

Great stress was laid on the necessity of legislation which would enable the department to strengthen its research and regulatory work by the payment of salaries which would attract and hold the most competent scientific and technical specialists and administrative officers. To better administer and coördinate the very large and varied work conducted by the Department through 15 bureaus and other offices, and to secure better relations with State work in similar lines, it was recommended that Congress authorize the appointment of directors of scientific work and of regulatory work as permanent officers under Civil Service regulations.

The regular appropriation for the Department for the year ending June 30, 1921, amounted to \$31,712,784, a decrease of \$2,187,427 as compared with those for 1920. Under permanent appropriation acts the Department controls the expenditure of additional amounts, including the road fund of \$100,000,000, the extension fund of \$3,580,000, and the meat inspection fund of \$3,000,000. The supplementary appropriation of \$1,000,000 to combat outbreaks of contagious and infectious diseases of animals was reduced to \$50,000, to which must be added an unexpended balance of \$500,000. Appropriations were reduced for the eradication of hog cholera, cattle tick and dourine, and for the study of animal diseases. For combating the European corn-borer \$400,000 was appropriated and for the eradication of the pink bollworm of cotton \$488,560. The appropriations for the Forest Service aggregated \$6,295,822, which were offset by \$4,385,414 of receipts from lumber sales and grazing leases in the National Forests in 1919.

The appropriation for the Bureau of Plant Industry was reduced from \$3,379,638 to \$3,004,394; Bureau of Markets from \$2,811,365 to \$2,538,700; and Bureau of Crop Estimates from \$371,102 to \$318,656.

Under the Bureau of Biological Survey provision was made for work relating to the improvement of the reindeer industry in Alaska (q.v.). To this Bureau was also transferred from the Department of Commerce the enforcement of laws for the protection of fur-bearing animals in Alaska.

In the Sundry Civil Appropriation Act \$725,000 was appropriated for the printing and binding of the Department of Agriculture.

AHEARN, JOHN F. Tammany politician, died in New York City, December 19. For some years past, he had been one of the leaders of Tammany Hall. He was born in New York City, April 18, 1853, and was a clerk in several business houses. Entering politics he was elected to the New York Assembly in 1882 and in 1889 he was elected to the Senate. He was subsequently appointed president of the Borough of Manhattan, where his administration caused serious complaints and finally definite charges were brought against him and laid before Governor Hughes. The latter after an investigation ordered his removal, Dec. 9, 1907. Then followed a contest

in the courts for two years. He succeeded in retaining his office until December, 1909, when he was compelled to obey the decision of Governor Hughes.

AIRCRAFT. See AERONAUTICS.

AIRPLANE. See AERONAUTICS.

AIRSHIPS. See AERONAUTICS.

ALABAMA. POPULATION. According to the preliminary report of the census of 1920, there were 2,348,174 residents in the State, Jan. 1, 1920, as compared with 2,138,093 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 256,023, a falling off of 2.6 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Prod., bbl.	Value
Corn	1920	4,277,000	67,149,000	\$65,806,000
	1919	4,334,000	62,843,000	99,920,000
Oats	1920	366,000	6,551,000	5,765,000
	1919	372,000	6,696,000	7,081,000
Wheat	1920	68,000	653,000	1,502,000
	1919	138,000	1,242,000	3,043,000
Tobacco	1920	2,500	*1,500,000	825,000
	1919	3,000	*1,890,000	567,000
Sweet potatoes	1920	180,000	17,460,000	17,460,000
	1919	151,000	14,194,000	16,039,000
Potatoes	1920	48,000	3,216,000	6,432,000
	1919	44,000	3,520,000	7,568,000
Hay	1920	1,480,000	*1,364,000	26,581,000
	1919	1,437,000	*1,437,000	32,045,000
Cotton	1920	2,842,000	*660,000	49,500,000
	1919	2,791,000	*713,000	124,103,000
Peanuts	1920	410,000	9,020,000	8,659,000
	1919	380,000	6,840,000	14,911,000
Cowpeas	1920	532,000	5,107,000	10,214,000
	1919	408,000	2,326,000	5,850,000
Soy beans	1920	28,000	228,000	912,000
	1919	7,000	59,000	171,000
Sor. sirup	1920	90,000	*8,910,000	8,109,000
	1919	85,000	*6,375,000	6,056,000

* Pounds. b Tons. c Bales. d Gallons.

TRANSPORTATION. At the close of the year 1920 the State had 4819 miles of main line and double track, and yard and siding track amounted to 1760 miles. There was no new construction of importance during the year.

FINANCE. According to the report of the State auditor for 1920, the financial situation was as follows: Total receipts, \$12,078,296; total expenditures, \$11,299,607; State balance, \$178,560; bonded debt, \$9,057,000.

LEGISLATION. An extraordinary midsummer session of the legislature was called by Gov. Thos. E. Kilby in 1920 to make suitable provision for the voting of the women of Alabama in accordance with the Federal woman suffrage amendment. The same conditions which previously applied to male voters were extended to include women and in addition the legislature submitted to the voters an amendment to the State constitution providing that in order to register or vote, the elector must be of good character and must understand the duties and responsibilities of citizenship under a republican form of government. This amendment was designed to prevent the voting of undesirable females of the negro race and the election on the amendment was called for Feb. 7, 1921.

A constitutional amendment was ratified in February of 1920, which authorized the State to issue \$25,000,000 bonds for the building of a State highway system. None of the bonds were marketed during 1920 as the amendment was attacked in the courts and financial conditions made them an undesirable investment as they

were limited to 5 per cent. At the midsummer session a constitutional amendment was also submitted allowing the sale of \$5,000,000 of the bonds at par and not more than 6 per cent interest. This amendment was also to be voted on Feb. 7, 1921.

POLITICAL CAMPAIGNS AND ELECTIONS. The year 1920 in Alabama was notable for one of the most remarkable political campaigns in the State's history. The Democratic primary was held May 11, to determine a successor to United States Senator Oscar W. Underwood. The candidates were: Senator Underwood, L. B. Musgrove of Jasper, and Judge S. D. Weakley. Out of 132,949 votes cast Senator Underwood's majority over his two opponents was only 882, while his plurality over Mr. Musgrove was only 10,659. In the same primary a State commissioner of conservation was nominated. Out of 112,257 votes cast the majority of John H. Wallace, Jr., the incumbent over A. L. Kimbrough was only 119.

The contest for senator was complicated by the fact that union labor took a more conspicuous political stand than in previous years in the State. However, a successor to the late United States Senator J. H. Bankhead was nominated in the same primary, Congressman J. Thomas Heflin being successful, in which contest the labor question was not a factor. The union fight upon Senator Underwood was based upon his championship of the Cummins railroad measure. His opponent, Mr. Musgrove, was national chairman of the campaign to ratify the Prohibition amendment to the Federal Constitution, so that this issue also figured prominently.

Democratic nomination is equivalent to election in Alabama so that the general election amounts to no more than ratification of what has been done in the primaries. The State election law has a unique provision whereby the candidate in the primary must receive a majority of all the votes cast. In order to avoid a second primary each voter also registers his second choice. In case a majority is not recorded for a candidate the two highest men add their first and second choice votes together, the one having the highest total of first and second choice votes being declared the nominee. The detailed results of the unusual primary of May 11, 1920, were as follows:

For United States Senator:		
	First choice	Second choice
L. B. Musgrove	56,257	5,172
Oscar W. Underwood	66,916	2,129
S. D. Weakley	9,776	21,199
For United States Senator, short term:		
	First choice	Second choice
J. Thomas Heflin	49,554	11,062
Emmet O'Neal	33,174	3,691
Ray Rushton	13,232	7,316
Frank S. White	34,854	12,699
Justice of the Supreme Court (two elected):		
Joel B. Brown		62,792
B. M. Miller		69,986
William H. Thomas		71,012

The results of the presidential election in November were as follows: Cox, Democrat, 163,254; Harding, Republican, 74,690; Debs, Socialist, 2369. The vote in 1916 had been: Wilson, Democrat, 99,546; Hughes, Republican, 28,662; Benson, Socialist, 1916.

The results of the senatorial election in November were as follows: Oscar W. Underwood, Democrat, 154,664; L. H. Reynolds, Republican, 77,337; Forsman, Socialist, 1984.

COAL STRIKE. The strike of the United Mine Workers of America in the Alabama coal fields was another important event of 1920. Sporadic strikes broke out in the State as early in the year as May. A general strike in the entire field, however, was called for September 5. It was claimed that more than 20,000 coal miners responded. The coal operators contended, however, that by November they had as many miners as ever and were mining a normal tonnage. The strike was attended by a great deal of violence particularly in Walker County. In that county Leon M. Adler, general manager of the Corona Coal Company, one of the largest producers in the district together with two deputy sheriffs were shot and killed while driving along the highway. This act culminated a long series of crimes and on September 17 Governor Kilby called out the entire National guard of the State for duty in the mineral district under the command of Brig.-Gen. R. E. Steiner. These troops were still on duty in the mine fields at the end of the year. Violence decreased immediately though on December 22 a guardsman killed a miner at Nauvoo in Walker County, who resisted arrest and the soldier, James Morris, of Company M, Tuscaloosa, was shortly afterward shot and killed by a miner named William Baird. Baird surrendered later claiming self defense, while the friends of the guardsman claimed he had been shot in the back. The incident caused very tense feeling to exist between the guardsmen and the striking miners.

OFFICERS. Governor, Thomas E. Kilby; Lieutenant-Governor, Nathan L. Miller; Secretary of State, W. P. Cobb; Treasurer, R. L. Bradley; Auditor, H. Fitzhugh Lee; Attorney-General J. Quincy Smith; Adjutant-General, Hartley A. Moon; Superintendent of Education, Spright Dowell.

ALABAMA, UNIVERSITY OF. A State institution for the higher learning, situated at University, Ala.; founded in 1831. In 1920, the enrollment of the summer school was 845 and the total enrollment in all departments was 2061. The total in the regular session was 1216 (eliminating duplications). The attendance was distributed as follows: College of Arts and Science, 720; School of Commerce and Business Administration, 71; College of Engineering, 210; School of Law, 135; School of Education, 129; School of Medicine, 51; and School of Pharmacy, 8. The university also provided for 30 students in the course for Vocational Rehabilitation. The endowment fund has been derived from royalties arising from leases of coal lands. In 1919-20, the income was placed at \$121,000, which, at the normal rate of increase, was expected to reach \$165,500 in 1922. The university library contained 50,000 volumes, but there were in addition a number of departmental and special libraries. President, George H. Demy, Ph.D., LL.D.

ALASKA. The Territory was recovering more slowly than any other part of the United States from the industrial disturbances and economic depression caused by the world war. Decreased population, reduced mineral production, inadequate transportation facilities and epidemics seriously affected development of resources and general prosperity. As material fac-

tors in territorial welfare should be noted the steady recuperation of the Pribilof seal herds, increased numbers and commercial utilization of reindeer, the larger use of forestal resources, the exploitation of gold lode mining, the development of coal fields, Federal action on leases, and the progress in the construction of the national railroad.

The divided and inefficient Federal control—due to the inattention of Congress and to bureaucratic methods of administration continued throughout the fiscal year. However the diminished population, reduced mineral output and impaired transportation gave rise to such complaints as resulted in a coöperative organization of the executive departments which promise material benefits in the near future. The personal visit of Secretary of Interior Payne to Southern Alaska led to prompt action to remedy as far as possible existing evils and to the adoption of such administrative methods as would best conserve the future of Alaska. Thorough reformation was possible only through Congressional legislation. Secretary Payne convened an inter-departmental board, with an Alaskan expert, A. H. Brookes, as chairman, on which were representatives of the Departments of Agriculture, Interior, Post Office, and of the Shipping Board. They were directed to investigate and report "As to what immediate steps can be taken to better conditions in Alaska, what industries can be developed, and resources exploited to give employment to a resident population which, in turn, will give a home market for Alaskan products."

After a study of all available data in their limited time, the Board in its report pointed out the restriction, through Federal laws, of oil and coal production for the past decade, the unavoidable depletion of fishery industries unless properly protected, the lack of a regular and prompt mail service, and the utterly inadequate means of transportation facilities, both on land and at sea. They reported that the past products of Alaska approximate \$1,000,000,000 in value, but that retrogression had set in, necessitating the adoption of a Federal policy to counteract it. The most important and urgent recommendations of the Board were as follows: (1) Coördination and consolidation of steamship service with resultant economies that would reduce passenger and freight rates; and improvement of the postal service; (2) the obtaining of Congressional authority for an Alaskan Development Board for Federal control of resources, and pending this the appointment of an inter-departmental Committee; (3) coördination of road construction, with the development of a comprehensive system of roads and trails; (4) investigation of the commercial feasibility of smelting copper ores within the Territory; (5) the immediate development of a pulp industry, and surveys of timber and water power contributory thereto.

As a result there was formed, by authority of the President, a permanent Inter-departmental Commission on Alaska, with the following functions: "To coördinate and bring together facts and suggestions touching matters affecting Alaska, and make recommendations for definite action . . . that duplication may be avoided and efficiency secured." The committee was composed of the Governor of Alaska, of representatives from the Departments of Agriculture, Commerce, Interior, Post Office, War, and of the Shipping Board and Power Commission.

POPULATION. By the census of Jan. 1, 1920, the population of Alaska was 54,899, of whom 29,210 were whites, and 25,788 natives, etc. They were distributed as follows, whites and natives respectively: Northwestern, 262 and 2884; Western, 563 and 6773; Southeastern, 12,257 and 5158; Upper Yukon, 5681 and 2667; Seward Peninsula, 1345 and 3922; scattered, 281 natives. Practically one-third of the population is in the Juneau-Sitka region. The recent decrease in the white population was primarily due to the unusually large number of men who volunteered for the world war, to the reduced mining operations, and to the high wages in the States. It is difficult to ascertain if the natives are generally decreasing more rapidly than is the fate of semi-civilized races in contact with those of higher civilization. The influenza epidemics of 1919 and 1920 caused nearly 1500 deaths—about 6 per cent of the natives. An epidemic of measles in about 1904 carried off fully as many more. Assuming the census of 1900 as being correct (that of 1910 has been questioned), when the natives were numbered 27,037, the diminution is proceeding very slowly.

LEGISLATION. Its sessions being biennial there was no meeting of the Territorial Legislature in 1920. Only a few Federal legislative acts were specially applicable to Alaska. By the Act of May 31, 1920, jurisdiction over land fur-bearing animals was transferred from the Department of Commerce to the Department of Agriculture. Congress also authorized action for the improving and safeguarding of the reindeer industry through joint coöperation of the Bureaus of Biological Survey and of Education. The general leasing laws enacted by Congress will greatly hasten the development of the coal, oil, and forestal resources.

COMMERCE. The annual decrease in the value of shipments into and from Alaska continues. The aggregates for recent fiscal years were: 1918, \$131,010,368; 1919, \$116,945,475; 1920, \$109,325,445. The inward shipments were: 1918, \$44,280,075; 1919, \$35,554,034; 1920, \$33,998,462. Of the inward shipments during the year it is to be noted that in general they increased, except for a falling off of iron and steel, which were largely employed for railroad construction and cannery purposes. The decrease of \$80,000 in coal followed local development of mines. The outward shipments were: 1918, \$86,730,293; 1919, \$81,730,293; 1920, \$75,326,983. Large decreases occurred to the extent of \$431,674 in gold and silver; of \$667,128 in copper, although the quantity was increased; and of \$8,305,796 in fish. Encouraging increases were sealskins, \$461,000, and other furs \$421,651. It should be recalled that wide fluctuations in prices during recent years deprive these comparisons of their usual import.

AGRICULTURE. As an established business farming is steadily improving in importance, but its markets are limited and local. The most prosperous and extended operations are in the Tanana Valley, near Fairbanks. In that region there were 102 homesteads, cultivated by 230 persons. In 1919 the crops were 60 tons of wheat, 40 of oats, 10 of barley, 500 of hay, 325 tons of potatoes, and 60 of other vegetables. The average wheat yield was 19.6 bushels per acre. Coöperative buying of equipment and supplies is under organization. The Matanuska region also raised enough vegetables for local

consumption. Stock raising is an incipient industry, needing Federal aid for its economical development. See AGRICULTURAL EXTENSION WORK.

FISHERIES. Fishing industries reached their maximum output, both in quantity and in value, in 1918. The annual catch in late years was: 1918, \$59,154,859; 1919, \$50,282,067; and (estimated) 1920, \$43,897,447. In 1919 persons employed 28,534, decrease 2679; capital \$84,181,560, increase of \$430,771. The decrease in salmon is shown later. The laws for protecting the fisheries are highly unsatisfactory, and unless remedied the fisheries will fall off as did the seals under neglect. With regard to the fishing industries, the Advisory Committee reported that it was the most important business of the Territory from the standpoints of product and of men employed. It added: "The Alaska salmon catch has probably reached its maximum, and any effort to a more intensive development will lead to rapid depletion. Proper safeguards can make the salmon fishery yield a large and continuous return. Without drastic protection the halibut fisheries will soon be depleted, as many banks are without the three-league limit."

SALMON, ETC. The salmon continues as the most valuable product of Alaska, its annual values being in late years more than double all the minerals produced in the Territory. While cured, fresh, and dried salmon amount in value to several millions of dollars yearly, the canned fish cover 95 per cent of the catch. The number of cases—48 1-pound cans to the case—in 1917 was 5,946,986, and in the maximum year, 1918, 6,605,535, valued at \$51,041,949. The pack of 1919 was 4,583,688 cases, \$43,265,349. The year 1920 also shows a falling off, being estimated at 4,225,000 cases.

The decrease in the salmon industry naturally caused great anxiety, and Dr. Hugh Smith, Chief of the Bureau of Fisheries, strenuously labored to remedy the situation, which could only be done under Congressional legislation. Departmental restrictions have in a measure preserved the more important spawning grounds, but commercial exploitation tends to over-fishing, endangering food resources of the natives and impairing the material future prosperity of the nation. Violations of the fishing laws and regulations were of frequent occurrence, and the systematic stealing of salmon from traps prevailed during the past two years. The halibut fisheries of 1919 produced 14,278,791 pounds, valued at \$1,150,605. About 6,000,000 pounds were delivered at Canadian ports, not included in the above. The catch of 1920 approximated 16,000,000 pounds. Herring now meets with competition from European countries, and in 1920 fell off to about 12,000,000 pounds. The cod catch for 1920 amounted to about 7,000,000 pounds, the product decreasing owing to Japanese competition.

REINDEER. The introduction of reindeer into Alaska has proved to be the greatest of benefits conferred by the government on the natives. The original importation of 1280 animals had increased in 1920 to about 275,000 deer. Approximately 100,000 had been killed for food or skins, leaving about 175,000 animals. While the deer were scattered along the coasts of Bering Sea and of the Arctic Ocean, the larger number were on Seward Peninsula. They were owned as follows: Natives, 69 per cent; Lapps and

whites, 22; missions, 5; and United States, 3 per cent. The reindeer industry has gradually transformed the Eskimo from a hunting to a pastoral people. Sense of property, pride of possession and desire for improvement in deer training have been the outcome. Disease and deterioration have threatened the future of the herds. However, a recent appropriation by Congress enabled the Bureau of Biological Survey and of Education to investigate and adopt such means as would best conserve the interests of the Eskimo owners. Prompt action was taken in this matter by Dr. Nelson, Chief, United States Biological Survey, who established at Unalakleet, Norton Sound, an experimental station for the treatment of the subjects of disease and breeding of reindeer, with an experienced pathologist and veterinarian as a working force. The exploitation of the reindeer for outside use had commenced with the herds owned by whites. Every steamer from Nome was loaded to the capacity of its cold-storage plant for transportation of meat to the States. Unfortunately the capacity was limited,—carrying only 99,000 pounds in 1918, and 37,000 pounds in 1919.

FUR SEALS. The seal herds of the Pribilof Islands increase steadily though slowly. The enormous damage wrought to these rookeries by pelagic hunting,—stopped by international convention between Great Britain, Japan, and the United States,—cannot be repaired within a generation. The average catch for six years, 1884–89 inclusive, exceeded 130,000 skins annually. The average number taken in the three years 1918–20 was less than 30,000. The census of late years gives the following numbers: 1918, 496,432; 1919, 524,235; 1920, 548,473. The distribution in age and sex for 1920 was. Cows, 167,527; pups, 167,527; bulls, 5227; yearling males, 51,074; yearling females, 51,081; 2-year males, 36,790; 2-year females, 37,158; males three years and over, 32,067. The only decrease of the year was in males over six years old, from 18,610 to 8075. These figures exclude seal killed for food by the natives, and those killed for their skins. The number of seals taken: 1918, 34,890; 1919, 25,381, and in 1920, 25,978. There were sold at auction in 1919 19,157 dressed, dyed and machined skins for \$1,501,603. The net proceeds turned into the Treasury in 1920 was \$1,457,791, beside which the sum of \$271,894 was set aside as due Great Britain and Japan under the fur-seal convention.

MINOR FUR-BEARING ANIMALS. By Act of Congress, May 31, 1920, jurisdiction was given to the Department of Commerce over seal and walrus, while the Department of Agriculture has charge of the land animals, except the fox herds of the Pribilof Islands. The land catch fell off, but as the prices of pelts were higher, the values were \$1,379,348 against \$1,305,021 in 1919. The fox pelts from the Pribilofs for the years 1918–19, numbered 667 blue, average value \$195.90, and 30 white, value \$55.33. The furs of land animals, including the foxes of the Pribilof Islands (667 blue, average value \$195.90; 30 white, \$55.33), in 1919 aggregated in value \$1,512,282. The economic importance of the land fur-bearing animals is not generally realized. In 1919, however, the value of these pelts exceeded by \$1382 the amount received for the fur seal. More than half the value of land pelts was derived from foxes, \$831,369. Although the average value of the blue fox is greatest, \$195.31, yet revenue

from this species was exceeded by both the white and red foxes, as also by the mink and muskrat. In order named the most productive species are: Red foxes, \$270,305; mink, \$252,360; muskrat, \$215,939; white foxes, \$212,110; blue foxes, \$203,854. It is worthy of note that the catch of foxes on the Pribilof Islands,—901 blue and 37 white in 1920,—is the largest number within 25 years. The conservation of these animals is closely supervised by the Federal officials. The Secretary of Commerce ordered close seasons as follows: Beaver until November 15, 1923; marten, November 15, 1925. The Territory is divided into three districts, and specific dates fixed for the open seasons in each, when fur-bearing animals can be killed. In general this season extends from December to March.

NATIVES. The decimation of the natives continued, the decrease being from 32,996 in 1880 to 25,508 in 1920. In 1918, 850 natives died of influenza, introduced along the lines of commercial exploitation. In the recurring epidemic of 1919 there were 45 deaths at Unalakleet and 440 in the Bristol Bay region. In some villages every adult is said to have perished. There were left 250 orphans who were distributed as far as possible among adjacent Eskimo families, the rest being assembled in two orphanages established for the purpose at Kanakanak and Tyonek. Through the Alaskan Bureau of Education the condition of the natives steadily has improved. There was better sanitation, prosperity in coöperative settlements, increase in school gardens, and better industrial training. Improved conditions were notable in the self-governing colonies on government reservations. The native town of Hyaburg is a modern community, with cannery, saw and other mills, dock, and an electric light system. Its coöperative trading company had June, 1920, assets exceeding \$60,000, and its original shares of \$10 had netted in nine years \$244.28. Noorvik, in the Kotzebue Sound region, near the Arctic Circle, with other modern plants has the electric light system.

Governor Riggs in reporting progress in education mentioned the condition of the natives (Kliinkits) of southeastern Alaska, as numbering among them clergymen, teachers, merchants, and navigators: They own homes, vessels, etc., and some are wealthy. The canneries in 1919–20 employed 3875 natives during the active season. The Pribilof natives steadily improve in mental and material ways under the supervision of the United States Bureau of Fisheries. Federal coöperation now enables the natives at remote points to dispose of their furs and make purchases through the officials of the Bureau of Education at Seattle.

The colony of Metlakatla, on Annette Island, renewed its prosperity under Federal supervision. The leasing of rights of fishing, canning, lumbering, etc., netted in 1918 \$70,253. The commercial company of the natives more than quadrupled its number of shareholders and its capital in three years' trading.

SCHOOL SERVICE—TERRITORIAL AND FEDERAL. Under Territorial management there were maintained 68 schools for the whites and those of mixed blood, at an expense of about \$96 per pupil, of whom about 3500 were enrolled. For full or half-blooded natives the expense was \$68,000, which it was thought the United States should meet. The separate schools for natives are conducted by the Alaskan Division, U. S.

Bureau Education. Under Superintendent Lopp the allied services of medical relief, education, and reindeer raising were administered. In 1920 the entire force consisted of 6 superintendents, 133 teachers, 9 physicians, and 13 nurses. There were schools in 67 native villages, where they were the centres of all activities,—civic, industrial and social. They are invaluable factors in the development of the children into a generation of educated, industrious and self-supporting adults who will largely contribute to the general welfare.

NATIVE MEDICAL SERVICE. The medical relief appropriation of \$80,000 was spent in maintaining hospitals at Juneau, Kanakanak, Akiak, Nulato, and Kotzebue. In each village the teacher has a standard equipment for ordinary ailments and minor injuries.

ALASKAN MINERAL PRODUCTION. The output from the mines of Alaska, which in 1920 aggregated about \$460,240,000, reached its annual maximum in 1918, after which year it seriously diminished. Two prominent factors caused this decline, the high operating costs brought about by the world war, and the great fall in the price of copper. Subsidiary to these were the scarcity of labor, and the gradual change in gold mining from the exploitation of placers to the development of lodes. The total mineral outputs in recent years were: 1916, the maximum year, \$48,632,212; 1917, \$40,700,205; 1918, \$28,253,961; 1919, \$19,820,913; and 1920 (estimated), \$22,070,000. The increase in 1920 was due entirely to a larger output of copper, amounting to \$3,600,000. The output of gold, temporarily displaced by copper, resumed in 1919 its supremacy as the most valuable of Alaskan minerals, but is again surpassed by copper. The amount and richness of copper deposits ensure speedy increase in the product whenever the price of copper advances, or a feasible plan of smelting ores locally is devised. Placer outputs will probably be increased in the near future by improved methods of exploiting large bodies of auriferous gravels of low gold content. Lode gold-mining offered prospects of an extended output as soon as conditions of transportation improved and labor costs were reduced. Coal, oil and petroleum conditions were more favorable under recent leasing laws. However, no marked improvement in the mining industry could be expected until transportation facilities were much better,—on land by railroad and roads, at sea by reorganized shipping arrangements. In round numbers the values of 1920 showed the following changes from 1919: Increases, copper, \$3,600,000; silver, \$195,000; platinum, \$6000; lead, \$69,000; coal, \$36,000; petroleum, etc., \$5000. Decreases were: Gold, \$1,426,000 and tin, \$53,000. The most encouraging feature of 1920 was the development of a large auriferous lode in the Nixon Fork (Kuskokwim) district, giving promise of value.

GOLD AND SILVER. The products of the most precious metals, gold and silver, from 1880 to 1920 inclusive were approximately as follows: Gold, \$320,000,000; silver, \$7,250,000. The maximum output of gold was \$29,411,716 in 1909, and in late years, \$9,480,942 in 1918; \$9,426,032 in 1919; and (estimated) \$8,000,000 in 1920. In recent years there have been great changes in the methods of production. The gold output of siliceous (auriferous lodes) ores from 1880 to date was 29.5 per cent of all, but there was a notable increase from 31 per cent in 1917 to

46.6 in 1919. Twenty-three lode gold mines produced in 1919 values of \$4,392,237, as against values of \$3,473,317 in 1918. This increase came from four large mines in the Juneau and Sitka districts. The average gold and silver content per ton of ore was \$1.38 in 1919, and \$1.70 in 1918. The lode mines and outposts were in 1919: Southeast Alaska, seven, \$4,174,407; Willow Creek, five, \$162,594; Fairbanks, six, \$41,893; Kenai Peninsula, three, \$8987; and two others \$4006. In 1920 the estimated output of 15 lode mines was \$4,360,000.

The placer mines in 39 years yielded gold to the value of \$218,000,000. This industry, seriously affected by economic conditions, is in its decadence. While the main cause of decrease was the depletion of bonanza placers, it was hastened by shortage of labor and increased costs of working. In 1918 the 574 working placers produced gold to the value of \$5,900,000. The output of \$4,970,000 in 1919 was curtailed by the reduction of 108 summer placers, with 823 miners, and 65 winter placers with 295 miners. No important placers were discovered during 1920. The more important outputs in gold and silver of placers in various districts were respectively as follows: Hot Springs, \$100,000 and \$915; Marshall, \$100,000, \$699; Koyukuk, \$1,100,000, \$851; Circle, \$135,000, \$1411; Innoko and Tolstoi, \$140,000 \$8415; Bonnifield, \$254,000, \$84; Ruby, \$165,000, \$1406; Kuskokwim, \$350,000, \$7; Tolovana, \$525,000, \$2454; Iditarod, \$725,000, \$5937; Fairbanks, \$730,000, \$5708; Seward Peninsula, \$1,360,000, \$7. It is to be noted that the output of placers on Seward Peninsula (Nome) in 1919 increased \$252,000. This in face of the yield of gold per cubic yard of gravel decreased almost uninterruptedly from \$3.74 in 1908 to \$1.10 in 1919. As Mr. Brookes pointed out, the fact that placer mining has survived is due to improved methods,—use of dredges, etc. The placer productions fell off from 1919 to 1920 about 37 per cent. The estimated decreases were: Southeastern Alaska, \$420,000; Copper River, \$10,000; Cook Inlet and Susitna, \$35,000; Yukon, \$1,185,000; Seward Peninsula, \$120,000; Kobuk, \$10,000. The only district showing an increase is Kuskokwim basin, \$50,000. Dredging declined less than other forms of placer mining.

Silver is most largely derived from the copper ores. The production in ounces and values were: 1919, 488,034, \$705,273; 1920, 887,000, \$900,000.

LEAD. The total output to include 1919 was 4184 tons, valued at \$522,318. It is derived almost entirely from the concentrates of the Juneau gold mines. The product of 1920, about 880 tons, value \$14,000, is the largest ever mined in one year. The largest amount came from the Kantishna district.

TIN. The total production to 1919 is 972 tons, valued at \$918,152. Recently there has been a decrease from 139 tons in 1916 to 86 tons and \$73,400 in 1919. York district, Seward Peninsula, is the main source of this metal. The output for 1920 fell to about 31 tons, value \$20,000.

PETROLEUM. Although there are extended promising fields of petroleum in Alaska, yet there were shipped into the Territory in 1919, 24,284,535 gallons of various kinds of oil. The withdrawal of such lands from public entry in 1910 has restricted local production of oil to a small patented area in the Katalla region. The leasing law of February, 1920, promises to afford

relief in the development of petroleum resources. The petroleum, marble, gypsum, etc., increased in value from \$143,113 in 1918 to about \$148,000 in 1920.

PLATINUM. Platinum, palladium and other metals of this group are largely derived from the copper palladium ore of Salt Chuck mine, Ketchikan. The output of 284 fine ounces, \$36,600, in 1918 increased to 570 ounces, \$73,663, in 1919. The value of the 1920 production was \$80,000.

COAL. Although coal fields exist in many parts of Alaska, the fuel condition thereof is indicated by the shipment into the Territory of 31,291 tons of coal for the nine months ending September, 1920. Withdrawals and Federal restriction during the past eight years have prevented commercial development except one patented section in the Bering River region. Under the recent leasing law there have been two grants in the Matanuska bituminous field, and two in the Nenana lignite fields. The Matanuska field has been developed by the United States under the Alaskan Engineering Commission, in connection with the construction and operation of the United States Railroad. In the Nenana field, lignite veins have been opened and several thousand tons of coal been obtained. In the more important Matanuska field the commission blocked out about 100,000 tons of high-grade bituminous coal at the Chickaloon mine. This mine was transferred to the United States navy on July 1, 1920, which is operating the mine for naval uses. The commission yet carries on operations at the Eska mine, where it has mined about 150,000 tons of bituminous coal, which supplies the needs of the railroad and other plants connected therewith. The coal mined in 1920 had a value of about \$380,000 as against \$343,347 in 1919.

COPPER. From 1908 to 1919 there was mined 616 million pounds of copper, valued at \$127,000,000. The maximum output was in 1916, 119,854,838 pounds, \$29,284,291. In 1919 six mines closed down, and the amount mined fell to 47,220,771 pounds, \$8,793,063. The values of the copper at various mines were: Ketchikan, three mines, \$117,013; Prince William Sound, five mines, \$1,915,852; Chitina, three mines, \$6,750,196. In 1920, eight mines produced 71,000,000 pounds of copper, \$12,400,000; gold, \$12,000; silver, 710,000 ounces, about \$720,000. Promising copper deposits have been discovered in the Susitna district, which await better economic conditions for their exploitation.

RAILROADS. The situation as regards commercial railroads remains unchanged, except for the construction of a railway for transportation of coal from the Bering mines to the sea at Cordova. The most important enterprise in Alaska is the construction of the United States Railroad. When completed this will include a standard-gauge line of 412 miles from Seward to Nenana, on the south bank of the Tanana River, with branches of 38 miles from Matanuska Junction to the Chickaloon coal mines, and of three miles on this branch to the Eska coal mines. In addition there is on the north bank of the Tanana a narrow-gauge road of 54 miles from North Nenana to Fairbanks, with a narrow-gauge branch of 32 miles from Happy to Chatinika. The north and south sections will be connected by a 3000-foot bridge across the Tanana. Progress on this most important project materially

slackened in 1920, due to lack of appropriations, short supply of labor, and a serious epidemic. The limit of the cost of the system was originally fixed at \$35,000,000, but the enhanced cost of material and rising wages exhausted the original funds, so that Congress in October, 1919, increased the limit to \$52,000,000 and appropriated \$6,000,000 for continuing the work. Emigration for war service reduced the local labor to such an extent that the Engineering Commission,—under whom the road is constructed,—was not only obliged to largely increase wages but had to charter a steamer to transport to and fro its workmen hired in Seattle. An epidemic of influenza incapacitated 90 per cent of the men on the northern division, and caused a number of deaths. At the end of the working field season of 1920 there remained to be completed the following: construction from mile 262 to mile 358, and the erection of bridges over the Susitna, mile 264; at Hurricane Gulch, mile 284; at mile 373, and across the Tanana River at Nenana. It is planned to have the road entirely completed and in full operation by the summer of 1922.

AIDS TO NAVIGATION. The efficiency of sea-transportation has been frequently impaired by insufficient safeguards along the precipitous and rocky shores. Frequent recommendations to increase the means of the Lighthouse Board have been unavailing to a great extent. There were, however, added in the last year 20 new lights, 17 buoys, and 11 beacons. The danger points of Cape Spencer, Cape Hinchinbrook and Point Retreat remain inadequately lighted.

FORESTS. The two great national forests,—Chugach, 5,130,201 acres, and Tongass, 15,449,539 acres,—have been administered for 1919-20 at an expense of \$56,394, with receipts of \$106,921. Active steps are in progress for the development of the forests by a system of roads and through leases. A pulp factory is under construction at Port Snettisham, to which 100,000,000 feet of timber has been sold. Other leases for pulp manufacture, for a term of 30 years, are under consideration, so that the utilization of the forestal wealth of southeastern Alaska may be considered as in progress, especially in sections adjacent to water power. In 1920 ten applications were made to the Federal Power Commission for water rights in Alaska.

MAILS. Of this service the Advisory Committee says: "The Post Office Department is not functioning and cannot meet the needs of Alaska under existing organization of transportation facilities." To the great detriment of the inhabitants the Post Office Department and steamship companies are at odds about contracts. Letter mail is slow and uncertain, being shipped by express. Other classes of mail are shipped as freight and suffer much from neglect and by losses.

MILITARY TELEGRAPH SYSTEM. The delay and uncertainty of the mails has made the telegraph service unusually beneficial during 1920. It comprises 56 offices, with a force of 255 army and 48 civilians. In 1919-20 its paid business amounted to \$236,509 tariffs, while the tariffs of the governmental business aggregated \$235,517. The submarine cable from Seattle to Sitka, laid many years since, has been damaged in parts, and is to be repaired by 100 miles of new cable, authorized by congressional appropriation. The service of this system is now sup-

plemented by nine radio stations of the navy, which bring the Pribilof and adjacent islands into regular communication with southeastern Alaska.

TRANSPORTATION. Not only all future development, but also the maintenance of existing industries depend very largely on cheaper transportation by sea and on land. Sea transportation is inadequate and expensive, and in southeastern Alaska Canadian competition is a serious factor. The freight and passenger traffic has an inward overcrowded steamer peak in spring, and an outward peak in autumn. The remainder of the year steamers are only half loaded.

WAGON ROADS AND TRAILS. The important problems of road construction remain divided between three agencies,—Alaska (War) Road Commission, Forestry Roads, and Territorial Commission. Four Federal bureaus have funds for the construction of roads. The Advisory Committee set forth that the exploitation of extensive unworked mineral deposits is absolutely dependent on wagon roads and trails. Recommending cooperation of the three agencies in devising a system of roads, the committee urged specifically the early construction of 16 roads, of which five, tributary to the railroad, should reach the mining districts of Kantishna, Nizina, Talkeetna, Valdez, and Yentna.

PUBLIC LANDS. Years of neglect in this service have been followed by slow progress in surveys. Efforts to consolidate the different branches of the land office have failed. In 1919-20 there were 18 townships, whole and fractional, surveyed, making a total of 152 townships—68 on the Seward meridian, 46 on the Fairbanks, and 16 on the Copper River.

ALBANIA. A geographical region formerly made up of the Turkish provinces of Scutari and Janina and parts of the vilayets of Monastir, and Kossovo, which for several years before the war had an indeterminate status and which presented one of the Balkan problems at the Peace Conference and afterwards. The estimated area has been given as between 10,500 and 11,500 square miles and the estimated population between 800,000 and 850,000, of whom about two-thirds are Moslems, the remaining one-third Christians, being divided into Roman Catholics in the north and Orthodox Greeks in the south. After 1914, the provincial capital was Durazzo with a population of 5000. Other important towns with their estimated populations are Scutari (32,000); Elbasan (13,000); Tirania (12,000); Berat (8500); Korytza (8000); and Valona (6500).

The independence of Albania was declared at Valona, November 28, 1912, and accepted in principle by the London conference of ambassadors, December 20, 1912. Afterwards the governments of the Powers decided approximately the frontiers and agreed that it be governed by a European prince. The crown was conferred upon Prince William of Weid, Feb. 21, 1914, who was to rule under the advice of an international commission of control. The country fell into anarchy after the beginning of the war, when the members of this commission departed and Essad Pasha, who had been driven out in May, returned September, 1914, and tried to set up a military government, but failed (Oct. 5, 1914). During the war the Austrians overran the country and captured Durazzo, Feb. 28, 1916. Mean-

while the Italians had also penetrated Albania and Jan. 3, 1917, the Italian general declared the country independent, and a provincial government was set up at Durazzo.

HISTORY. In 1920 the charges of Serbian atrocities continued and a commissioner of Albania at Washington repeated them in detail. They were denied by the minister of Jugo-Slavia at Washington. It was reported on June 6th, that the Albanians had begun a formidable revolutionary movement against the Italians for the purpose of driving out their troops. Down to that time it had been generally supposed that the people were favorable to Italian rule, either in the form of a protectorate or under a mandate. According to the organs of the revolutionary element, Italy was not justified in her claims. The following summary presents the Albanian contentions:

The views commonly entertained on the subject were said to be the result of Italian propaganda which had spread the report that the Albanians were so well satisfied with Italian rule that they had no desire for national independence. Italian propagandists had dwelt on the gratitude of the Albanians for Italy's deliverance of the southern Albanians from the Greeks; also on the weakness of Albania and her consequent need of a protecting friend. Finally reports were circulated that the Albanians were unable to govern themselves and required therefore the direction of Italy. Then came the Italian claim to Valona, Albania's chief seaport, on the ground that its possession would place Italy in a position of security for the exercise of her authority. The recent events which had led to the present situation were thus summarized: By the secret treaty of London, April, 1915, Albania was partitioned among Italy, Greece, and Serbia. On June 3, 1917, the commander of the Italian expedition in Albania, General Ferrero, officially declared in the name of the King of Italy that the Albanians should have a government of their own under the protection of the crown of Italy. After President Wilson visited Rome in December, 1918, and in his speeches declared that the Balkan states should be left free and undisturbed by foreign interference, the national Albanian assembly at Durazzo, December 25, 1918, elected its first governor of the reestablished Albanian state in the face of the opposition of the Italian authorities. Italy interfered by controlling the cables, telegraphs, etc., and suppressing the news about the new Albanian government and by refusing to issue passports to Albanian delegates to the Peace Conference that were not acceptable to her. The Albanian delegates through Italy's influence had been only twice admitted to the Conference, and Baron Sonnino of the Italian delegation had said there was no need of a separate Albanian mission because the Italian delegates would speak on behalf of Albania. Having lost faith in the Italian government, the Albanian delegates on April 4, 1919, adopted an independent policy and sent a protest to the Conference to the effect that Italy aimed at subjugating Albania or dismembering her under the terms of the treaty of London. Things were worse under the presidency of Signor Nitti. In September, 1919, it was learned that Italy had made a separate agreement with Greece for the building of a railway through southern Albania without consulting either the Albanian

government or the Albanian people; thus Italy was treating Albania as an Italian province. In January, 1920, the Albanians sent a delegation to Rome requesting Italian recognition of Albanian independence and territorial integrity in return for aid on the part of Albania in safeguarding Italian interests on the Adriatic. A reply was promised but never came and on January 20th Italy approved an agreement whereby Albania was to be distributed among Italy, Greece, and Jugo-Slavia. The last-named Power, however, rejected this agreement. In the course of the Adriatic dispute President Wilson had characterized the partition of Albania as a criminal act. Great indignation was aroused among the people. There were some clashes with the Italian troops which tried to prevent a meeting of the new assembly. This national assembly, however, succeeded in meeting January 28, 1920, and continued its session in spite of the objection of the Italians. It was there decided to overthrow the former government and replace it by one whose members were pledged to oppose all foreign interference whether Italian or not. It addressed a message to the Italian government saying that the people would not accept the humiliation of becoming an Italian colony and it sent appeals to the Allied Powers and the United States. The new government established itself at the inland city of Tirana. In the beginning of June, the Nitti government decided to withdraw Italian troops, but it did not withdraw them altogether, concentrating them at various Italian ports. Hostilities between the natives and troops resulted and on June 6th a general rising of the seaport populations began against Italian troops. In the first onset they drove the Italians from Alessio, Durazzo, Chimarra and Santi Quaranta. This revolt, however, broke out in the provinces which were not under the jurisdiction of the Albanian government and the latter therefore had nothing to do with the movement.

The above account of the Albanian view of the matter is based on the report by Constantin A. Chekrezi, commissioner to the United States on behalf of the new Albanian government. In the autumn negotiations were going on with the American government for recognition of her independence and with American banking concerns for a national loan. In the appeal to the American government it was argued that the Albanians were now law-abiding and showed a remarkable degree of political solidarity. The purpose of the proposed national loan was for the making of public improvements in general and in particular for the extension of the railways to afford connection with the Belgrade-Nish-Saloniki system, and for improving the conditions of the ports on the Adriatic. American aid was also sought for the establishment of an Albanian university.

On the last day of the year, an earthquake nearly destroyed the city of Elbassan. According to early reports, fourteen persons were killed, 300 injured and 10,000 rendered homeless. Supplies were promptly sent by the American Red Cross from the Adriatic coast. The city is in the centre of the region which a few weeks before had suffered severely from shock.

ALBANIAN. See PHILOLOGY.

ALBERTA. A province in the northwestern part of Canada which formerly made up a large part of what was known as the Northwest Ter-

ritories; east of British Columbia, west of Saskatchewan and north of the United States, having an area of 255,285 square miles and a population in 1916 of 496,525 of whom 307,776 were rural. The population was distributed between the sexes as follows: Males 277,256; females 219,269. Chief cities, with populations in 1916: Calgary (56,514); Edmonton (53,846). Edmonton is the capital. Vital statistics for 1918 were: Births, 14,890; deaths, 7924; marriages, 404.

The province was created by the Alberta Act of 1905 and according to the constitution, the executive power is vested nominally in the Lieutenant-Governor appointed by the Dominion government, but actually in the Executive Council or Cabinet of the Legislature; and the legislative power is vested in the assembly whose members are elected by universal suffrages, women having the right to vote. Lieutenant-Governor at the beginning of 1920, G. Brett; Prime Minister, Charles Stewart.

ALCOHOL AND NARCOTICS, SUBSTITUTES FOR. The elimination from the markets of these toxic habit-forming substances through Federal legislation will most certainly lead to efforts in the direction of harmless substitutes. The first evidence has been seen in an increased consumption of coffee and probably of tea. The active principle of these substances, caffeine, is also the active principle of other racial stimulants, notably Paraguay tea and the African kola nut. We are unable to state how much if any of the latter is present in some of the fountain drinks which make use of the name "kola"; or, rather, whether there is enough caffeine present to produce a stimulating effect. The only other type of racial stimulant in use with us is tobacco, the consumption of which is likely to increase with prohibition, despite the enormous amount of cigars and cigarettes formerly sold in saloons. We have recently read in the daily press that a company is being organized to exploit the Polyneesian stimulant known as *kava*. This, when abused, ranks with the natives as an intoxicant and narcotic, but until it is possible to demonstrate such destructive powers it might be possible to sell it in good faith or to trade, merely on its reputation. The drug has a limited sale for medicinal purposes, chiefly as a diuretic, and has never been in demand here as a stimulant or narcotic.

Ordinary food is the natural source of energy and a man physically and mentally depressed from fasting is rapidly energized by taking a warm meal even before the food can be converted into heat and muscular force. One of the leading causes of resort to alcohol has always been given as insufficient food, whether a quantitative deficit or the omission of some necessary constituent from the diet. The time is now fully ripe for the study of scientific feeding, owing to the recent discovery of specific food articles, whether glandular substances (internal secretions), vitamins, or the so-called end-products of digestion, termed aminoacids. Irrespective of these specific nutrient substances there is much to be learned in regard to ordinary food articles. Certain individuals can make sugar answer as a stimulant food although a meal composed of sugar alone would be repellent to the average man, who must have ballast food—something to distend mechanically the stomach—and must also have something on which to chew. Hence it is possible to devise a breakfast which will

utilize both theoretic and practical requirements. Experiment has shown that bulky food which requires much mastication is a direct stimulant of muscular energy. Fresh fruit like bananas, raw or cooked, or dried figs, which are themselves rich in sugars, may be sweetened in excess with table sugar, and eaten warm. A considerable amount of mastication is required and the result both as to immediate results and persistent effect may be all that is desired in cases where a conventional breakfast fails to satisfy. Certain individuals claim to derive an immediate stimulant effect from warm milk taken in sips, but it is only in very young nursing animals that the fluid seems to pass directly into the bloodstream without digestion. The restorative effect in these cases may be due in part to the continuous act of shipping, which is said to increase the blood pressure slightly, together with the introduction of a bland and edible substance into the empty stomach. It seems entirely reasonable to believe that the future man who seems unable to turn his food into energy will discover as a result of much experiment certain meals which will give him the desired result. Meals of this sort have the disadvantage of being fattening and here it is pertinent to state that to benefit by tonics and stimulants, including stimulating meals, an active life is a great advantage. An article like the preceding can only be made suggestive, for it is quite impossible to consider the subject in all its aspects.

ALEXANDER, CHARLES MCCALLON. British-American evangelist, died at Birmingham, England, October 13, 1920. He was considered by many to be the chief evangelistic singer in the English speaking world. He was born at Maryville, Tenn., Oct. 24, 1857, and engaged in evangelistic work in his youth. He was the successor of the American evangelical singer, Ira B. Sankey, who accompanied the late Dwight Moody in his tours. Mr. Alexander organized and conducted large chorus choirs for eight years and he accompanied the late Reverend Torrey in his tour of the world in 1902-06 in which he made one of his own compositions, the "Glory Song," famous everywhere. He made a second tour of the world with his wife in 1906-07 and later organized a vast evangelistic choir comprising some 4000 members in London. He compiled numerous volumes of gospel hymns; organized the Pocket Testament League which during the late war was said to have distributed a million new testaments among the troops; conducted united missions in Australia, China and other parts of the East as well as Great Britain and America, and before leaving America a few weeks before his death he began an extensive Bible revival campaign.

ALEXANDER. King of Greece, second son of Constantine I and of Queen Sophie, the sister of the former German emperor, died at Athens, October 25. His death was the result of wounds received in an attack by a pet monkey early in October. He was born August 1, 1893, and in the course of his education studied for a time at Oxford, England. Before his accession he was serving in the Greek army as a captain of artillery and was said to have made an excellent military record. As it was not expected that he would succeed to the throne over his eldest brother, he was not placed under much restraint and mingled with the people, by whom

he was generally liked. His early English association had an influence upon his choice as it was thought it would dispose him favorably toward the Allies. The elder brother, Prince George, Duke of Sparta, was passed over by the Allies in the belief that he was pro-German. When King Constantine's rule became insupportable to the Allies they notified him that he must abdicate in favor of his second son, Alexander, under pain of Allied recognition of the Venizelos provisional government over all Greece instead of merely over Saloniki. There were frequent rumors during Alexander's brief reign that he too was pro-German and that he sympathized with his father and mother; also, that he was violently opposed to certain policies of Venizelos. He entered into an irregular marriage with Mlle. Helen Manos, and there was much discussion over the question of regularizing it, certain popular papers urging parliament to do so, and the press that supported the former king, however, along with the aristocracy and the military, opposing it. English influence was reported as favoring it and French influence as opposed. While the controversy was continuing, the King was bitten by his pet monkey, October 2, and died of poisoning.

ALFALFA. Of the acreage of tame hay crops in the United States, according to estimates by the Department of Agriculture, over 20 per cent is now occupied by alfalfa, and in 1919 out of a total tame-hay population of 91,883,000 tons nearly 24,000,000 tons was alfalfa hay, a greater proportion than that furnished by any other hay crop, even the popular mixture of clover and timothy, which stands next. The tame-hay production for 1920 was placed at 91,193,000 tons and the average yield per acre was nearly the same as that of the preceding year, so that the production of alfalfa hay for the year was regarded about equal to that of 1919.

The leading alfalfa growing States are California, Nebraska, Colorado, and South Dakota, given in the decreasing order of importance. These five States furnish nearly one-half of the total production of the country. The prices of alfalfa hay during the earlier months of 1920, together with hay prices generally, ranged higher than ever before and reached an average on May 15 of \$25.68, the highest average price by States, \$45.60 per ton, being reached in South Carolina and the lowest, \$17.50 per ton, in New Mexico. The price of alfalfa seed in the spring of 1920 also was much higher than usual, reaching \$25.22 per bushel, as bought by farmers on April 15th, and \$24.68 per bushel as sold by them on March 15th.

During the fall of 1920, owing to some extent to favorable seasonal conditions resulting in good pasturage for an extended period, the demand for hay was comparatively small and the average price of alfalfa hay on October 15, 1920, was only \$18.03 per ton. This shrinkage in market value reduced sales and shipments and made trade in alfalfa hay rather dull. It was estimated that during the fiscal year ended June 30, 1920, about 20,000,000 pounds of alfalfa seed were imported, much of which met the high prices of the spring market, but the domestic crop of seed in the fall of the year encountered much lower prices and moved from the hands of the producers rather slowly. Alfalfa meal prices were low at this time and earlier in the year

due to transportation difficulties some of the larger alfalfa mills closed down.

The use of sulphur as a fertilizer for alfalfa attracted attention during the year and was reported as profitable. Progress was made in the control of the alfalfa weevil by the proper and timely spraying with solutions of arsenate of lead and other arsenicals and of the alfalfa caterpillar by timely close cutting, irrigating, and brush dragging.

ALGERIA. A French colony in northern Africa, comprising two main divisions, Northern and Southern Algeria, which are divided into departments and territories as follows: Northern Algeria (departments): Algiers, Oran, and Constantine; Southern Algeria (territories): Ain Sefra, Touggout, Ghardaria, and the Saharan Oases. The area including the territories in the south is estimated at 343,000 square miles. The population in 1914 was: Northern Algeria, 5,069,522; Southern Algeria, 494,306 total, 5,563,828, which included a native population of 4,740,526 and a European population of 752,043. Chief towns with population figures for 1912: Algiers (172,397); Oran (123,086); Constantine (65,173); (these three being respectively the capitals of the provinces of the same names); Bone (42,039); Sidibel-Abbes (30,942); Tlemcen (39,874); Blida (35,461). There is a university at Algiers which

phate rock, and antimony. Fisheries in 1917 employed 3480 persons. There is a considerable revenue from forest products, and stock-raising, especially of cattle, sheep, and goats, is important. See AGRICULTURE.

COMMERCE. The total value of Algerian foreign commerce in 1919, including goods in transit (*commerce générale*) amounted to 2,470,000,000 francs (\$476,710,000, normal exchange), which is 820,000,000 francs (\$158,280,000) greater than 1918 and 707,000,000 francs (\$136,451,000) in excess of 1917. The value of Algerian imports for internal consumption in 1919 was 943,055,000 francs (\$182,009,615), and the exports of the colony's products, 1,344,860,000 francs (\$259,557,980), a total of 2,287,915,000 francs (\$441,567,595) (*commerce spécial*), which is 758,860,000 francs (\$146,459,980) above 1918 and 751,990,000 francs (\$145,134,070) over 1917. These figures indicate a considerable recovery from the war conditions prevailing in the previous years. The increased economic activity of the colony was greatly facilitated by improved ocean communications, which made possible a marked gain in the volume of trade. The value of the trade of Algeria by classes of goods for the years 1918 and 1919, and a comparison with 1913, is given in the following table (all conversions in the report have been made at the normal rate of exchange, 1 franc equals \$0.193):

Groups	1913		1918		1919	
	Trade with France	Total trade	Trade with France	Total trade	Trade with France	Total trade
IMPORTS						
Animal products	\$4,634,128	\$8,192,271	\$4,317,445	\$7,687,383	\$10,775,576	\$14,328,706
Vegetable products	14,471,140	28,527,279	13,721,300	21,400,612	14,828,067	33,827,689
Mineral products	5,230,300	9,407,785	7,305,050	14,682,282	6,908,979	18,598,638
Manufactures	81,883,724	87,662,530	53,188,852	99,424,336	87,117,112	115,254,582
Total	106,219,287	128,789,865	78,527,647	143,194,613	119,628,734	182,009,615
EXPORTS						
Animal products	14,697,836	18,553,862	12,283,498	16,508,641	19,013,395	23,464,940
Vegetable products	47,974,589	61,910,926	96,555,391	117,136,332	186,911,429	212,330,301
Mineral products	1,681,995	10,076,530	2,673,248	10,031,754	2,528,800	9,015,995
Manufactures	1,954,125	6,184,299	1,558,282	9,579,555	3,484,229	14,746,744
Total	\$66,308,545	\$96,725,617	\$113,020,414	\$158,256,282	\$211,937,353	\$259,557,980

in 1918 had 675 students and 112 professors; and there are special schools for commerce, agriculture, fine arts, etc. The Mussulman schools in 1917-18 numbered 496, with 37,214 pupils. The primary and infant schools, public and private, in 1917-18 numbered 1305 with 146,508 pupils. The greater part of the country is of small value for agricultural purposes, the northern portion being mountainous and suitable chiefly for grazing and forestry, but there are highly fertile plains and valleys in a small area on the neighboring coast, and these are scientifically cultivated and for the most part owned by Europeans, the most profitable returns coming from vineyards and cereals. There is a varied system of land tenure, including metayage. The chief cereal crops are wheat, barley, oats, and maize, and there is also a considerable production of potatoes, beans, and other vegetables. Fruits abound including the orange, date, mandarin, citron, banana, pomegranate, almond, fig, etc.; and the mineral wealth comprises lead, zinc, mercury, copper, and tin ores. The latest figures for production available are for 1918 and 1919. The yield of wine in 1918 was 205,613,575 gallons. The total mineral output in 1918 was 1,041,817 metric tons, distributed chiefly among the following metals: Iron, zinc, lead, phos-

FINANCE. The following table gives the details of the 1920 ordinary budget:

Revenue		Francs
Taxes (direct)	49,400,585	
Taxes (indirect)	22,731,628	
State domain	10,510,212	
Customs	24,223,844	
Postal services	15,470,500	
Receipts d'ordre	26,574,150	
Special revenues	48,204,676	
Total (including all items)	204,671,801	
Expenditure		
Administration, debt	50,625,125	
Governor-General	23,958,356	
Interior	37,369,338	
Native affairs	8,908,881	
Finance	18,221,045	
Posts and Telegraphs	19,051,618	
Public Works	17,019,355	
Agriculture, etc.	6,149,429	
Railways	16,313,532	
Forests	5,985,180	
Total (including all items)	204,485,349	

The following information in regard to the total budgets (ordinary and extraordinary) was supplied by the United States Bureau of Foreign and Domestic Commerce: The Algerian

budget estimates for 1921, presented on May 17, 1920, by the governor-general at the opening of the session of the financial delegations, represented a serious effort to reestablish a proper balance between the receipts and expenditures of the colony. The general budget, which included both ordinary and extraordinary receipts and expenditures for 1921, was as follows: Receipts, 480,660,287 francs (\$92,767,435 at normal exchange); expenditures, 480,269,360 francs (\$92,091,986); surplus, 390,927 francs (\$75,449). In 1920 the receipts were fixed at 510,639,736 francs (\$98,553,469) and the expenditures at 510,629,736 francs (\$98,551,539). This reduction of 30,000,000 francs (\$5,790,000) in the 1921 budget applies only to the extraordinary items of the budget, as the ordinary budget for 1921 is 25,000,000 francs (\$4,825,000) greater than in 1920.

COMMUNICATIONS. The tonnage of vessels entered and cleared in 1919 is shown in the following table:

UNDER FRENCH FLAG		Entered	Cleared
France	1,245,044	1,497,598	
French possessions	74,193	74,179	
Foreign countries:			
European:	178,410	53,689	
Other	69,811	63,722	
Total	1,565,458	1,689,188	
UNDER FOREIGN FLAGS			
France	295,707	432,796	
French possessions	32,123	27,215	
Foreign countries:			
European	532,495	722,479	
Other	147,935	111,620	
Total	1,008,260	1,294,110	
Grand total	2,573,718	2,983,298	

Vessels entered in French and foreign trade in 1918 numbered 5360 with 2,762,290 tons net; vessels cleared, 5367 with 2,783,546 tons. The merchant marine in January, 1919, comprised 928 vessels of 14,627 tons net. On January 1, 1919, 2203 miles of railway were open for traffic, of which 807 miles were privately owned. Postal and telegraph statistics were not available for a later date than 1917, when there were 9151 miles of telegraph and 712 post offices.

GOVERNMENT. The administration is centralized at the capital Algiers under a governor-general who has charge of all services except the non-Mussulman services of the treasury, justice, public instruction, and worship. He is the chief executive authority and prepares the budget which is kept distinct from that of France and is voted by the Financial Delegations and the Superior Council. The Delegations which were established in 1898 represent respectively the French colonists, the French tax-payers who are not colonists, and the native Moslems. The Superior Council consists of elected members and the higher officials. There is a consultative council which assists the governor-general. The source of legislative power is the French parliament to which each department of Algeria sends one senator and two deputies. An improved civil status was bestowed on natives by the law of Feb. 4, 1914, according citizenship to those of them who had served in the war, who were proprietors or farmers, who could read or write, or who had received a French decoration. The governor-general in 1920 was M. Abel.

ALLEGHENY COLLEGE. An institution of the higher education, situated at Meadville, Pa., non-sectarian in policy, but under the control of the Methodist Episcopal Church; founded in 1815. The enrollment for 1920 was 536. The faculty numbered 34, three members having been added in the course of the past year. Productive funds amounted to \$1,010,000, and the income was \$172,000. The library contains 60,000 volumes. The total capital of the institution in 1920 was placed at \$3,010,000. President, Fred. W. Hixson, LL.D.

ALLEN, FREDERICK STURGES. Editor, died at Springfield, Mass., August 8. For many years he was engaged in the making of dictionaries and in 1915 won the gold medal for work in lexicography at the San Francisco Exhibition. He was born at Norwich, Conn., October 1, 1861, graduated at Yale College in 1884, and studied at the Yale Law School. He began his work as a lexicographer on the Webster publications in 1884; was contributor and editor of law articles in the *Johnson's Universal*, the *Appleton's Universal*, and the *NEW INTERNATIONAL ENCYCLOPEDIA*, and in the last-named was also editor of pronunciation. After that he returned to his work on the Webster publications. He wrote books on spelling reform and synonyms, and published a volume on the art of pronunciation in 1920.

ALLENTOWN, PA. See SEWERAGE AND SEWAGE PURIFICATION.

ALLIANCE FRANCAISE, 'FÉDÉRATION DE L'. Founded in 1902, this is an association of clubs, societies, and groups formed for the purpose of encouraging and furthering in the United States and Canada the study and cultivation of the language, literature, art, and history of France. During the year clubs were affiliated at Chattanooga, Tenn.; Huntington, W. Va.; Waterbury, Conn.; Randolph-Macon Woman's College, Lynchburg, Va.; Grinnell College, Grinnell, Iowa; and Westminster College, New Wilmington, Pa. Thirty more clubs and groups are about to be joined to the federation, which makes a total membership of clubs of 208. *L'Assemblée Générale Annuelle* was held in New York on April 10, 1920. It was proposed that the magazine *La France* be permitted to publish a supplement to its ordinary edition containing the news of the federation. The meeting was opened by a speech from M. Jusserand, the ambassador to the United States from France. During each year arrangements are made for a number of speakers to tour the country, visiting and speaking before the various clubs of the federation. This was again carried on in 1920. Among the officers of the federation may be mentioned the following: Honorary President, J. J. Jusserand; president of the Administrative Council, J. Le-Roy White; vice-president (Eastern States), Alexander T. Mason; general secretary, pro tem, Felix Weill. Headquarters are maintained at 2 Rector St., New York City.

ALSACE-LORRRAINE. A territory acquired after the War of the Nations by France, whose possession was confirmed by the Treaty of Versailles in 1919. From 1871 down to the end of the war it was an imperial territory, or *Reichsland*, of Germany and was divided into the three districts of Lower Alsace, Upper Alsace, and Lorraine. It was governed by a Statthalter appointed and removable by the Emperor, subject to the consent of the Diet, which consisted of two chambers, the first comprising nominated

members, and the second, sixty members elected by general direct suffrage. The area according to the German figures was 5605 square miles and the population in the German census of 1910 was 1,874,014, of whom the German-speaking were 1,634,260 and the French-speaking, 204,262. According to religion, the population was distributed in 1910 as follows: Catholics, 1,428,343; Protestants, 408,274; Jews, 30,483.

After the return of the territory to France it was divided into the departments of Bas-Rhin Alsace, with an area of 1848 square miles and a population given at 700,938; Haut-Rhin (1354 square miles; population, 517,865); and Moselle (2403 square miles; population, 655,211). By the law of October 17, 1919, the territories were placed provisionally under a commissioner-general until laws should be passed definitely incorporating them in France. The large cities with their population in 1910 were: Strassburg (178,891); Mulhausen or Mulhouse (105,488); and Metz (79,318). For the two last-named cities, however, the figures accepted by France in 1920 were somewhat lower. The head of the higher education is the University of Strassburg. After the return of the country to France it was reported that the French were making rapid progress in the introduction of the French system of education.

In 1919 and 1920, the administrative system was centralized under a commissary-general, aided by an advisory council. In the main, the government of Alsace-Lorraine retained the unity of the region and was taken as an example of so-called "regionalism." It was pronounced by its partisans to be very successful and they argued from it that similar measures for the preservation of regional unity should be taken for all the divisions of France.

According to a report of the commission on Alsace and Lorraine appointed by the French government, the production of potash salts in Alsace during the year 1919 was 591,471 tons, an increase of about 65 per cent over the production in 1913, which amounted to 350,341 tons. It was believed that this output would be greatly increased in 1920, as there has been a considerable decrease in production resulting from the difficulties connected with the transfer of the mines from German to French hands. The production of pure potash amounted in 1919 to 96,546 tons, of which 30 per cent was exported to the United States. Nearly all of the remainder was consumed in France. In August, 1920, the French Chamber passed a bill providing for the acquisition and equipment by the state of the potash mines of Alsace; and a credit of 75,000,000 francs was voted for this purpose. The mines had been down to that time sequestered and the measure looked to their continued exploitation.

There were a number of strikes in the spring in the Department of Haut-Rhin. At this time a large number of school teachers associated themselves with the working-class movements. Charges were brought against them and they were required to appear before a disciplinary tribunal which condemned them to pay a small fine. The trial brought out the fact that the school teachers had some just grievances.

ALUMINUM AND BAUXITE. The quantity of bauxite marketed in the United States in 1919 was 376,566 long tons, which had a value at the mines of \$2,201,747, a decrease from the pro-

duction of 1918 of about 38 per cent in quantity and about 36 per cent in value. The production in Georgia, Alabama, and Tennessee in 1919 was 43,076 long tons, an increase of less than 1 per cent, but the production in Arkansas was only 333,490 long tons, a decrease of about 41 per cent. The United States has for years led in the world's production. The domestic consumption of bauxite in 1919 was about 38 per cent less than that in 1918. Considerable bauxite was imported from South America. Most of the bauxite exported, which included bauxite concentrates, was apparently shipped to Canadian producers of aluminum and abrasives. The prices received for bauxite in 1919, as reported by producers, ranged from \$5.45 to \$12 a long ton; the average price paid for all the domestic bauxite sold in this country was \$5.85 a long ton at the shipping point. The bauxite deposits of the United States are in central Arkansas, northeastern Alabama, northwestern Georgia, southern-central Tennessee, central and central-western Georgia, and northeastern Tennessee. The bauxite from all localities in the United States, though it may vary in chemical composition, is on the whole similar in general appearance, with the exception of the "granitic bauxite" of the Arkansas field. The greater part of the American bauxite appears to be made up of rounded pebble-like bodies set in a fine-grained matrix, which may also consist of small rounded particles or may be as fine grained as the finest clay. The pebble or pisolite form is so general that it is the conspicuous characteristic of American bauxite. The value of bauxite can be determined only by chemical analysis, which should show total silica, alumina, titanium oxide, iron oxide, and water.

The value of primary aluminum produced in the United States in 1919 was \$38,558,000, a decrease of about 6 per cent from the value of the output in 1918. The decrease was due largely to curtailment in the production of aluminum forced by the accumulation of large stocks in the preceding year. Exports of aluminum and manufactures of aluminum in 1919, \$3,890,326; imports for consumption, \$4,568,595. The demand for aluminum during the war was large, owing to the extensive use of aluminum in the automotive industry. Aluminum was released in 1919 for some uses that had been poorly supplied during 1917 and 1918, as they were not essential to war activities. The principal aluminum salts made in the United States are alumina, alums (mainly ammonium and sodium alums), aluminum sulphate, and aluminum chloride. Alums of various qualities are produced at eight plants in the eastern United States, and the total production of alum in 1919 was 17,019 short tons, valued at \$879,198, a decrease of approximately 16 per cent in quantity and value from the production in 1918. The average price reported by makers of alums was \$51.66 a short ton. Aluminum sulphate is made at 23 plants, five of which are at municipal or industrial waterworks, which consume their entire output. The total quantity of aluminum sulphate produced in the United States in 1919 was 200,034 short tons, of which 4725 short tons did not enter the market but was used for purifying water at the place of manufacture. The quantity of domestic aluminum sulphate that entered the market in 1919—195,309 short tons—was less than the quantity in 1918 by about

33 per cent, and the total domestic production decreased about 1 per cent. The price reported by makers of aluminum sulphate for the output in 1919 averaged \$33.80 a short ton. Aluminum chloride was produced at three plants in 1919, and the total output reported to the Geological Survey was 4806 short tons, valued at \$371,850. This is an increase of 14 per cent in quantity and 10 per cent in value over the output in 1918.

AMERICAN ASSOCIATION OF ENGINEERS. See MUNICIPAL GOVERNMENT.

AMERICAN ASSOCIATIONS AND SOCIETIES. For organizations whose official titles begin with the word American, see under the important descriptive word of the title.

AMERICAN FEDERATION SYMPHONY ORCHESTRA. See MUSIC, *Orchestra*.

AMERICAN FIELD SERVICE FELLOWSHIP FOR FRENCH UNIVERSITIES. See UNIVERSITIES AND COLLEGES.

AMERICAN LEGION. See LEGION, AMERICAN.

AMERICAN-SCANDINAVIAN FOUNDATION. See UNIVERSITIES AND COLLEGES.

AMETTE, LEON ADOLPHE. Cardinal and archbishop of Paris, died in Paris, August 29. He was born at Douville, September 6, 1850. After studying at the Seminary of St. Sulpice in Paris he was ordained priest (1873); was made vicar of the cathedral and secretary of the archbishopric of Paris in 1886; ordained bishop, January 25, 1899; and succeeded Cardinal Richard as archbishop of Paris, January 28, 1908. He was made cardinal, November 27, 1911. His funeral, attended by representatives of the principal political parties and of the government, was celebrated in Paris, September 4th. The occasion was remarkable as the first time in fifty years that the state had associated itself in the public mourning for death of a Catholic archbishop. The spirit shown in the French community at the time of his death was taken by many to indicate that the spirit of public religious division had come to an end. Since the year 1905 the state, officially at least, had ignored the church and for nearly half a century the state and the church had been in a hostile attitude to one another. The government participation in the funeral was acclaimed by the government's supporters as a sign that the *Union Sacrée* formed in war time had produced enduring results.

AMHERST COLLEGE. An institution of the higher learning, situated at Amherst, Mass., where it was founded in 1821. Students enrolled for the year 1920-21 numbered 503 (allowing for duplication). There were 63 members of the faculty. Productive funds, \$4,434,000; income for the year, \$372,000. The library contained 125,000 volumes. Courses of instruction are all-year courses, with final examinations in June covering the work of the entire year. During the year the president was on leave of absence and Dean George Daniel Olds was acting president. The college was preparing for the celebration on June 20-22, 1921, of the 100th anniversary of its founding and its alumni were raising a fund of \$3,000,000 as a gift in honor of that occasion. President, Alexander Meiklejohn, Ph.D., LL.D.

AMMUNITION. See MILITARY PROGRESS.

AMUNDSEN. See POLAR RESEARCH.

ANÆMIA, SURGICAL TREATMENT OF. While ordinarily regarded as a symptom rather than

a disease, there is a group of so-called primary anæmias the causes of which are unknown. Because of the very serious and practically hopeless outlook in these cases, and the attempts to cure many of them by removal of the spleen and other surgical procedures the subject of primary anæmia will become one of increasing importance. In addition to forms in which the term pernicious is applied there are other forms of so-called primary anæmia which are traceable in some cases to the spleen, while others are characterized by jaundice which masks the anæmia to some extent. Finally the chlorosis of young girls is reckoned among the primary anæmias. With the exception of the latter, which is sharply marked off from the others and may also be cured or outgrown, the primary anæmias present much the same picture among themselves in addition to bearing a close resemblance to some of the secondary anæmias, such for example as that due to a form of tapeworm. In some of the latter cases removal of the parasites does not cure the disease.

The subject of the anæmias is far too complicated and involved to be discussed in a work of general reference, and the only factor of popular interest is the possibility of surgical relief, which often holds out the sole hope of recovery. At one period the term surgical treatment would have implied only the extirpation of the spleen in selected cases. More recently it has been claimed that certain cases can be traced to foci of chronic suppuration in the body, and the latter have been extirpated. Autopsy upon victims of pernicious anæmia has sometimes resulted in the discovery of septic mouth or other possible nidus of poison. If such a causal connection could be proved such cases would of course be classed as secondary anæmias. Thus far excision or other removal of such foci has produced only transitory benefit and we cannot be sure that these focal conditions are really the cause of the anæmia; the latter is often without any suggestion of accompanying disease processes, save those which are secondary to the anæmia itself. Moreover oral sepsis is so extremely common that its presence may usually be set down to coincidence.

The number of cases in which the spleen has been removed in the hope of curing or arresting pernicious anæmia must now be very large and counted in hundreds. Thus far it is not known that any permanent cure has been obtained, although not infrequently the patient has received an extension of life. Taken as a whole it is not certain that the average benefit or aggregate benefit has offset the undesirable results, operative risk, expense, etc.

There is a third surgical resource in pernicious anæmia and that is blood transfusion. Originally and not so long ago the field of this resource was thought to be limited to acute losses of blood. Recently systematic transfusion has been shown to be our best resource against these disease forms. The improvement which follows is usually considerable and the operation may be repeated at intervals. The patients have sometimes left their beds and resumed business for a short period. But the improvement is not lasting nor are all the symptoms relieved. The donor of the blood must be of the same blood type as the patient and whole blood must be transfused. This resource has a great advantage over extirpation of the spleen because applicable

to all cases of anemia. The spleen is not to be removed unless there is reason to believe that the organ is in some way responsible for the blood state—in other words unless the condition belongs under splenic anemia. It is probable, however, that in some cases the operation has been practiced as a last resort without any refinements of diagnosis. The many total failures also suggest that the diagnosis may at times have been at fault despite all care.

ANALYTICAL CHEMISTRY. See CHEMISTRY.

ANATOLIA, or **ASIA MINOR**. That part of the former Turkish Empire which consists of a peninsula at the western extremity of Asia, bounded by the Black Sea on the north and east and by the Mediterranean on the west, with an area variously estimated at from 196,000 to 199,272 square miles and a population estimated at from 9,000,000 to 10,186,900, of whom about 7,000,000 are Turks. The component parts or vilayets with their estimated area and population are as follows: Brussa, area 25,400 square miles, population, 1,626,800; Smyrna (Aidin), area, 25,801, population, 2,500,000; Konia, area, 30,410, population, 1,069,000; Angora, area, 27,370, population, 932,800; Adana, area, 15,400, population, 422,400; Sivas, area, 23,970, population, 1,067,500; Trebizond, area, 16,671, population, 1,265,000; and Kastamuni, area, 19,570, population, 961,200; and there are also the two sanjaks of Ismid (area, 3130, population, 222,700), and Bigha (area, 2550, population, 129,500).

Anatolia is the purely Turkish portion of the former Ottoman Empire and after the war was considered as the only proper base of the new Turkish state. In 1919 and 1920, however, it was overrun by Nationalist troops under Mustafa Kemal. See **WAR OF THE NATIONS**, and **TURKEY**.

ANDREWS, **WILLIAM LORING**. American author, died March 20. He was born in New York State, September 9, 1837, and was educated in private schools. He was a trustee of the Metropolitan Museum of Art and a member of various other important associations. He wrote a variety of books pertaining to local history, book collecting, engraving, early American history, bibliography, etc.

ANEMIA. See **ANÆMIA**.

ANGLICAN CHURCH. See **ENGLAND**, **CHURCH OF**.

ANGOLA, or **PORTUGUESE WEST AFRICA**. A Portuguese colony on the western coast of Africa; bounded by French Congo, Belgian Congo, the Union of South Africa, and the former German colonies of Southwest Africa, and having a coast line of about 1000 miles. The boundaries were fixed by conventions on May 12, 1896, May 9, 1891, and June 11, 1891, as regards French and British possessions, and on Dec. 30, 1896, as regards the frontier with Southwest Africa. The estimated area is 484,800 to 490,000 square miles and estimated population, 4,120,000. Capital, St. Paul de Loanda; other important towns, Cabinda, Ambriz, Novo Redondo, Benguella, Port Alexander. The native population in 1914 was placed at 2,124,361. The military force maintained there has varied in number, between 2712 and 4731, the majority being natives. The chief products are coffee, rubber, wax, sugar, vegetable oils, ivory, coconuts, oxen, and fish. Rubber was formerly the chief industry, but

latterly the supply has been exhausted. There are ample supplies of copper, petroleum, iron, and salt, and malachite and gold have been found. Trade is mainly with Portugal. Textiles are the chief imports and coffee the chief export. In 1917-18, the revenue was estimated at 13,435,221 escudos and the expenditure at 16,418,413 escudos. Railway opened for traffic was 818 miles. The carrying trade has been largely in the hands of the Portuguese National Navigation Company. There is a cable connection between the colony and the telegraph systems of East, West, and South Africa. The Trans-African railway was purchased by the government in July, 1918. The colony has been in the possession of Portugal since 1875 except for a few years in the seventeenth century, when it was held by the Dutch. The administration is in the hands of a governor-general, whose seat is at St. Paul de Loanda, and for administrative purposes it is divided into nine districts.

ANHALT. A free state of Germany, formerly a duchy of the German empire, bounded by the Prussian provinces of Brandenburg and Saxony; with an area of 888 square miles and a population of 331,128. Capital, Dessau, with an estimated population of 56,605; other cities, Bernburg (33,724); Cöthen (23,416); and Zerbst (19,210). The great majority of the population are Protestants. The estimated income and expenditure for 1919-20 was £1,472,000. Before the war the executive power was in a duke and legislation in a diet of 36 members. In 1918 the system of government was changed, the duchy was declared a republic and the people voted for the Constituent Assembly. A constitution was created July 18, 1919, in accordance with which the diet is elected by popular vote for three years and the executive power is placed in a state council of five members, under a chairman who has the title of president.

AND **VETERINARY MEDICINE**.

ANIMAL INDUSTRY. See **LIVE STOCK**.

ANNAM. A French protectorate constituting part of French Indo-China (q.v.), acquired by France under the treaty of 1884. Area, about 52,100 square miles, with a population in 1914 of 5,200,000, including 2117 Europeans. The capital is Hué (60,711); the largest town, Binh-Dinh (74,000). Along the coast in the towns, the population is Annamite and the highlands consist of Moi tribes. Agriculture is carried on chiefly in the interior where irrigation has been introduced. The products are cotton, rice, corn and other cereals, nuts, spices, sugar, betel, and manioc, and there is an abundance of timber and various vines and medicinal herbs, also a considerable production of raw silk. As to the mineral wealth, there are mines of iron, copper, zinc, and gold which are worked by the natives, and coal mines are found in the neighborhood of Tourane. Salt also is obtained. Besides numerous village schools there is a school of law and administration and a high school for boys and one for girls. In 1919 there were 108 primary schools with 5200 pupils, for boys, and 12 primary schools with 384 pupils for girls. In 1919 the local budget balanced at 5,723,139 piastres. In 1918 the imports amounted to 5,067,518 francs and the exports to 8,705,679 francs; the principal imports being cotton yarn, cottons, petroleum, tea, paper goods, and tobacco; and the chief exports being rice, sugar, cotton, silk, tea, cinnamon, and paper. At the head of the government

is the King, Khai-Dinh, who came to the throne in 1916, and who is assisted by a council of ministers, but his authority is not final, and must conform to the wishes of the French government. The administration is largely in the hands of Annamite officials under the control of the French government.

ANTARCTIC REGIONS. See POLAR RESEARCH.

ANTHROPOLOGY. In spite of economically unfavorable conditions anthropology continues to thrive in academic centres. The registration in the elementary course at the University of California reached the record-breaking figure of 784, and in the University of Washington (Seattle) an ambitious scheme of anthropological courses is offered by Dr. L. Spier under the auspices of the sociological department. A marked increase in attendance is reported from Barnard College. Columbia offers a number of new courses, among them a practicum in physical anthropology by Dr. B. Oettking. The New School for Social Research in New York has introduced anthropology into the curriculum, with Dr. A. A. Goldenweiser as the lecturer. Signs of transatlantic activity are not lacking. The new university at Hamburg has lectures on African languages, physical anthropology and ethnology, and at Munich Drs. W. Lehmann and L. Frobenius have founded an ethnological research institute. A movement is on foot to introduce anthropology into the curriculum of the University of New Zealand. A special turn in the development of anthropological interest is witnessed in the application of the science to Americanization problems, in which field Prof. A. E. Jenks of the University of Minnesota is the leader. The practical utility of anthropology to the state is likewise the main theme of the presidential address to the Anthropological Section of the British Association for the Advancement of Science (*Science*, 1920, vol. LII, pp. 371-376) by Karl Pearson, who insists on the possible services of the anthropologist as a vocational guide.

The rapprochement between ethnology and psychoanalysis continues. Dr. Rivers's recent visit to this country (see below) was made largely for the purpose of lecturing on psychoanalysis. In America Prof. A. L. Kroeber is devoting himself to a serious study of psychoanalysis, and Dr. A. A. Goldenweiser has delivered a series of lectures on the subject.

PHYSICAL ANTHROPOLOGY; ANTIQUITY OF MAN. Prof. Arthur Keith (Presidential Address to the Anthropological Section, Brit. Assoc. Adv. Science) has discussed "The Differentiation of Mankind into Racial Types." He suggests that the evolutionary mechanism is inadequate to explain the origin of races and derives them from peculiarities of the ductless glands, which have been shown to produce far-reaching effects in bodily conformation. Thus, he interprets the sharp nasalization, prominent chin and brow-ridges of the Caucasian in terms of pituitary function, the pituitary gland being attached to the base of the brain. On the other hand, an affection of the thyroid produces a yellowish tint, loss of hair, and a reduction of the nose—in short, Mongoloid features. Again, the long stork-like legs of the Nilotic Negroes may be due to the action of the interstitial glands embedded within the substance of the testicle and ovary. In a pamphlet on "Nationality and Race from an Anthropologist's

Point of View" the same author rapidly surveys the practical problems that have arisen in different parts of the globe through the contact of distinct groups, with special reference to the Irish question. Scientifically his most important statement is that the differences between Irish and British are purely cultural, the physical types being indistinguishable both in living representatives and in the remains of ancient graves. Further, the contention that of all the populations of the British Isles the Irish are the purest representatives of the Nordic stock is of considerable interest.

A contribution to the problem of racial classification is made by Fritz Paudler (*Anthropos*, XII-XIII, pp. 641-694), in a paper entitled "Cro-Magnon Studien." He contends that the Cro-Magnon types, characterized by long-headedness and a broad face, has not disappeared in prehistoric times but persists in a tall, blond "Dal" and a short, dark "Ber" race, the former name being derived from the Dalarna district of Sweden, the latter from the Berber country in North Africa. These varieties are said to represent two additional European races in addition to the Nordic, Alpine, and Mediterranean.

Anthropometric work similar to that popular on the Continent in recent years has been attempted by Prof. F. G. Parsons in England. His "Anthropological Observations on German Prisoners of War" confirm the previous impression that the Nordic type is found purest in the north-western part of Germany, while elsewhere the Alpine stock predominates. Thus, the cephalic index while nowhere attaining the British figure of 78.24 approaches it most nearly in Westphalia (80.4), Oldenburg (80.6), Schleswig-Holstein (81.0), and Brunswick (80.1). The region of long-headedness also coincides with that of fair hair, rubescence e.g. being twice as frequent in the dolichocephalic area. Finally, the greatest stature averages 5 feet 8.1 inches and 5 feet 7.8 inches are associated with Mecklenburg and Schleswig-Holstein, while the lowest, 5 feet 6.1 inches, is found in Wurtemberg. In short, there has been a gradual replacement of the Nordics in a large part of Germany by a shorter and darker type.

In a treatise entitled "Anthropometry of the Siouan Tribes" (*Anthrop. Papers*, Amer. Mus. Nat. Hist., vol. XXIII, pt. 3) L. R. Sullivan arrives at some interesting conclusions. A comparison of 17 local groups of Dakota Indians shows that they all represent a single physical type. The half-bloods are taller than the pure Indians and in those characters in which the two races differ most markedly the half-bloods stand closer to the Indians than to the whites. Compared with other Indian tribes, the Dakota rank as tall, with a mean stature of 172.4 cm. In this, as well as in all other traits, they correspond very closely to the Ojibwa. The cephalic index of 79.6 is identical for the two tribes.

Some suggestive observations are recorded in L. R. Sullivan's paper on "The Fossa Pharyngea in American Indian Crania" (*Amer. Anthropol.*, vol. XXII, pp. 237 seq.). The fossa pharyngea is a small depression in the ventral surface of the occipital bone. It is rather uncommon in European skulls, for which the percentage of 1.3 has been reported. Sullivan finds that for the prehistoric Basketmakers of Utah the figure rises to 26.8 and remains very high for a number of other Southwestern, as well as Mexican, groups.

It appears that this otherwise rare feature is associated especially with people speaking Aztec languages.

Important results bearing on the history of the Paleolithic technique are stated in preliminary announcements by J. Bayer (*Mannus*, XI-XII, pp. 215-223; *Zeitschrift für Ethnologie*, LI, 1919, pp. 163-178). Previous investigators have frequently inferred that the implements of Paleolithic craftsmanship in other continents can be chronologically equated with their equivalents in Europe. This conclusion is rejected by Bayer, who found in Palestine and Syria Chellean implements in association with post-placial loess-like material and with strangely slight patination. Faunistically similar finds in Phœnicia are associated with the cave-bear and *Rhinoceros tichorhinus*, i.e. they belong to the most recent diluvial period. The supposed Paleoliths are accordingly synchronous with the Campignien of Europe and represent a proto-Neolithic culture. This is established technologically by their association with transitional types suggesting the Neolithic ax, but also by a peculiar method of retouching wholly unlike anything belonging to the Old Stone Age and with a Campignien counterpart. Bayer contends that wherever a Paleolithic era has been assumed outside of Europe and possibly a small section of Africa, the cultural remains belong to his proto-Neolithic stage. In other words, the Old Stone Age is restricted to western Europe, which thus figures as the cradle of human culture. The Late Paleolithic Age is likewise unrepresented in other continents. Its culture probably evolved in northeastern Europe (Russia) and thence spread southwards. That is to say, while western Europe in the last interglacial period but one displayed the Old Paleolithic culture, the germs of the Aurignacian evolved in the north and northeast and spread thence during the Riss glacial period; and during the last interglacial period the Late Paleolithic culture gained complete dominance. The proto-Neolithic culture, on the other hand, is derived from Africa and is supposed to have been diffused in various directions.

GENERAL ETHNOLOGY. The problem of convergence is treated in Von Luschan's monograph on "Zusammenhänge und Konvergenz" (*Mitteil. der Anthropol. Gesellschaft, in Wien*, 3d series, vol. XVIII). Von Luschan identifies convergence with parallelism or independent development. He does not favor either of the rival theories of Genetic connection and convergence wholesale, but decides each case on its merits. As regards proof of the former, he relies largely on the coincidence of linguistic affinity, musical technique and mythological identities with the similarity of the cultural trait studied. Thus the supposed linguistic relationship of Hottentot and Hamitic tongues leads him to postulate a far-reaching cultural relationship. Notable instances of diffusion in his scheme are the composite bow, which has been carried from Egypt or Asia Minor to other parts of Eurasia and to western America and the technique of weaving, which he assumes to have evolved in the Orient and to have entered America in pre-Columbian times. He also argues for Mediterranean influence on the cultures of tropical West Africa. In a commentary on Von Luschan's monograph, K. Weule (Petermanns *Mitteilungen*, pp. 69-77, 153-157), while in part accepting the diffusionist point of

view, refuses to ally himself wholly with Graebner's school which, he insists, concentrates all its attention on a limited part of the legitimate field of inquiry.

W. H. R. Rivers's paper on "History and Ethnology" (*History*, July, 1920, pp. 65-80) elucidates the relations of these two branches of knowledge from the point of view of the British historical school. As distinguished from the Germans headed by Graebner, this group is not necessarily opposed to evolutionary conceptions, though it necessarily objects to the simplicity of the schemes by which the older anthropologists sought to summarize the course of cultural progress. By the use of an analysis based on the manner in which cultural features are associated, Rivers contends that it is possible to establish a genuine history. This will indeed be devoid of personal reference and will present a relative rather than an absolute chronology. Nevertheless it will be history and by a skillful combination of ethnological and documentary evidence it may even be possible to assign approximate dates to the events ethnology registers.

A quite different aspect of British anthropological thinking appears in R. R. Marett's book on *Psychology and Folk-Lore*. Diffusion, on which Rivers concentrates his attention, is here regarded as only furnishing a preliminary to psychological inquiry as to the processes involved in the acceptance of a custom or belief. Survivals are likewise treated from a psychological point of view, i.e. with reference to the motives tending to preserve them. Marett holds with Goldenweiser that the weird conceptions of primitive philosophy must not blind us to the knowledge actually possessed by primitive man. Only we must look for it in the right place. For example, he suggests that in ruder levels the predecessor of the physician should be sought not among the shamans but among the herb-gathering laity.

The extraordinary development of the anthropological department at the University of California has necessitated the publication of a *Source Book in Anthropology*, compiled by Professors A. L. Kroeber and T. T. Waterman primarily for their own classes, but in the absence of an up-to-date summary of results this collection is likely to take the place of a general text-book.

A synthesis of our present knowledge of sociology in the simpler cultures is attempted in R. H. Lowie's *Primitive Society*. It represents essentially the modern American point of view and specifically repudiates the principal tenets set forth in Morgan's *Ancient Society*. More particularly, Lowie rejects the hypothesis of primeval promiscuity, the priority of maternal descent, the lack of territorial organization among the ruder peoples, and the theory that all property was once held communally. In general the principle of diffusion is shown to interfere with any fixed sequence of stages, hence all evolutionary schemes are repudiated. A critique is offered of the economic interpretation of history, mainly on the basis of the far-reaching influence of the craving for prestige. The origin of the state is traced to the effects of "associations," i.e. clubs, fraternities, and other organizations of this type, which would assemble together the members of a local group. In contradistinction to Maine and Morgan, Lowie thus recognizes a territorial or political organization as a concomitant of the kindred organization frequently regarded as sole-

ly characteristic of primitive peoples. This last conception, viz., that a territorial bond exists in the ruder societies has also been voiced by A. A. Goldenweiser in his essay on "A New Approach to History" (*Amer. Anthropol.*, 1920, pp. 26-47), which is more particularly devoted to a critical scrutiny of F. J. Teggart's historical theories.

As evidence of the demand for synthetic treatises may be cited the publication of the late A. H. Keane's *Man, Past and Present*, as revised by Mrs. A. Hington Quiggin with the assistance of A. C. Haddon.

Father W. Koppers (*Anthropos*, X-XI, 611-651, 971-1079) devotes a substantial paper to "Die ethnologische Wirtschaftsforschung," i.e. the ethnological investigation of primitive economic conditions. He rejects with Hahn the hopelessly antiquated view that husbandry grew invariably out of pastoral life, and develops novel views on the basis of Graebner's and Schmidt's studies. More particularly, he assumes with Schmidt that the pristine culture of mankind branched out into three distinct types—one characterized by maternal descent and the bow, the second by patrilineal descent and totemism, the third by the domestication of animals.

AMERICA. The intricate question of "The Social Organization of the Kwakiutl" (*Amer. Anth.*, 1920, pp. 111-126) is clarified in Prof. F. Boas's most recent exposition. The Kwakiutl are divided into units called *numaym*, each characterized by a number of honorific positions, involving titles and privileges, which must be filled. The basic principle of succession is primogeniture, but its operation is modified by the dowry system, through which the father-in-law transfers privileges to his son-in-law or a member of the son-in-law's family. The privileges are individually owned, never by the whole *numaym*, and there is never a totemic relationship between the entire group and the crest which is attached only to certain individuals of high rank. In this regard the Kwakiutl usage corresponds to that of the Nootka rather than of the more northern Coastal tribes. The same line of cleavage appears in the kinship nomenclature; Kwakiutl and Nootka do not differentiate paternal and maternal kin, who are strictly separated by the Tlingit, Haida, and Tsimshian.

The, ultimate relations of Californian aborigines are illuminated in Kroeber's paper on "California Culture Provinces" (*University of Cal. Pub.*, vol. XVII, pp. 151-169). While it had been customary to distinguish three cultural provinces in California, Kroeber now attempts to indicate their affiliations outside the State boundaries. From a broader point of view Northwestern California is seen to form but part of a larger area embracing a large section of Southwestern Oregon and this interstate province itself must be conceived as a portion of the area whose cultural centre lies in coastal British Columbia. Similarly, the Southern Californian culture, with its two sub-types of the Colorado and the coast, appears as a remote relative of the cultures of New Mexico and Arizona. Oddly enough, the Colorado tribes in spite of their geographical proximity present no greater affinity with Arizona than do the coastal Gabriélino. While the former share such Southwestern traits as agriculture, totemic clans, and shields, the coastal people have the sweat-house estufa, the

sand-painting, and an organized and initiating cult society, all of which are lacking on the lower Colorado. Finally the great central Californian region must be extended indefinitely to the eastward to embrace Nevada and part of Utah. Here, however, the relative status of the Californian populations is reversed; while in the northwest and the south they appear as borrowers, the central tribes are in the ascendancy as compared with their neighbors of the Basin and may be assumed to have influenced them.

"The Cahuilla Indians" (*Univ. of Cal. Pub., Amer. Arch. and Eth.*, XVI, pp. 315-380) by Lucile Hooper gives an account of one of the largest surviving South Californian tribes, particularly of the Desert division living about or even below sea level. It appears from this study that the Desert Cahuilla share the culture of fellow-Shoshonean populations in Southern California rather than either with the Shoshonean nomads of the Great Basin or the alien Yuman tribes to the east. The Cahuilla were not agricultural prior to the advent of the Spaniards but depended for food mainly on the beans of the mesquite tree. They manufactured pottery and basketry but both arts have become obsolete. There is a girls' puberty ceremony during which, as well as during later menstrual periods, the girls must abstain from eating meat and from scratching themselves with their fingers. Boys are also initiated about adolescence, being instructed in singing and dancing and also as to proper conduct. The great ceremony of the tribe was the annual mourning for persons who died during the year and whose effigies were carried about and ultimately burned.

Although primarily conceived as a study of aboriginal place names, T. T. Waterman's "Yurok Geography" (*Univ. of Cal. Pub.*, vol. XVI, pp. 177-314) presents a great deal of general ethnographic information. The outstanding fact is the cultural affinity of the people, however remote, with the Coastal tribes of British Columbia. This appears especially in the predominance of certain conceptions regarding wealth. Individual property is recognized as to land—specifically as to fishing places, acorn fields, and snaring places. The first-mentioned more particularly could be sold, bartered, and bequeathed. Sometimes the same spot was owned by one individual for salmon-taking purposes and by another for catching eels. It was possible to will property outside the family and certain rights were acquired by marriage. In addition there was of course inheritance, which occurred in both the paternal and the maternal line. In consequence the total holdings of a single individual might come to be widely scattered.

Relatively little has been published on the Plains Indians. The sun dance of various tribes of this region is described in a series of minor papers by Goddard, Skinner, Wallis, and Lowie (*Anthropological Papers, American Mus. of Natural History*, vol. XVI, pts. 4, 5). A detailed account of "The Tobacco Society of the Crow Indians" (*ibid.*, vol. XXI, pt. 2) has been prepared by R. H. Lowie. The significant fact develops that the sacred tobacco plant of the Crow is botanically related to a Californian species and that the term for "tobacco" is practically identical among the Crow of Montana, the Takelma of Southern Oregon, the Shasta and Diegueño of California.

In the "Notes on Cochiti, New Mexico" by the late Father Noel Dumarest, translated and annotated by Dr. Elsie Clews Parsons (*Memoirs, Amer. Anth. Assn.*, vol. VI, n. 3), the ethnologist has acquired an excellent sketch of the religious and social life of a hitherto little-known Keresan people, as well as a serviceable introduction to the study of Southwestern culture generally. Clan descent at Cochiti is matrilineal, but marriage is patrilocal. There is a tribal society into which all males but no women are initiated. It is this organization that produces rain by impersonating the supernatural beings, i.e. specifically the dead, who can grant rain, health, and welfare. The women and children believe that the masked actors are the gods themselves and the men at least hold that by donning the sacred regalia they assume a holy character. Quite distinct from this society are the curing fraternities into which women are admitted. Their function is to extract the rattlesnakes, stones, and other objects conjured into the patient's body by evil magicians, of whom the natives stand in morbid fear. The oldest member of one of these organizations serves as "cacique" or spiritual head of the community. He is an honored but by no means absolute official, since he may be punished for transgressions of customary law. He himself is free from executive work but appoints an annual governor and other administrative officers. In his spiritual labors he has the assistance of the war priest, always chosen from those who are not members of the curing fraternities. This priest advises the cacique and with his deputies forms a sort of ritualistic police, since he supervises and organizes the masked dances.

Especially valuable from the psychological point of view is "The Autobiography of a Winnebago Indian," edited and annotated by P. Radin (*Univ. of Cal. Pub.*, vol. XVI, pp. 381-473). It reveals from the inside the workings of a culture from the Woodland-Plains border area, as well as the transformations wrought by modern conditions, especially by the recent Peyote religion in which ancient Winnebago faiths blend with Christian conceptions. An interesting field report by A. B. Skinner on the "Medicine Ceremony of the Menomini, Iowa, and Wahpeton Dakota" (*Indian Notes and Monographs*, vol. IV) is devoted to the religious life of the same region.

In his "Decorative Art and Basketry of the Cherokee" (*Bulletin, Public Museum of the City of Milwaukee*, vol. II, no. 2), F. G. Speck traces the gradual diffusion of cane basketry. He finds the industry to have centred in the Lower Mississippi region, though its ultimate place of origin may lie in the Antilles or even in South America. The Iroquois, whose southern derivation is now generally accepted, may be regarded as the carriers of the technique to more northern localities, but naturally the cane material of the South was supplanted by splints of oak and ash.

Baron Erland Nordenskiöld has published a sequel to earlier South American researches under the caption of *The Changes in the Material Culture of Two Indian Tribes under the Influence of New Surroundings*, the new volumes being dedicated to the Chiriguano and Chané tribes, the former representing the Guaraní stock, and the latter the Arawakan. The Chiriguano entered the borderland of Bolivia and the Argentine Republic in the sixteenth century, subduing the

native Chané population. Nordenskiöld studies the mutual influence of the two cultures thus brought into intimate contact, as well as the later effects due to European and Negro intrusions.

In "Notes on the Bribri of Costa Rica" (*Indian Notes and Monographs*, vol. VI, no. 3) A. Skinner offers observations on the material existence, social and ceremonial life of this Chibchan people. They are divided into exogamous matrilineal moieties subdivided into lesser clans. Mortuary ceremonies still figure prominently and notions of taboo and ritual uncleanness are in full swing.

Under the caption of *The Mythology of All Races: Latin American*, forming volume XI of the series, H. A. Alexander presents the first up-to-date summary of Central and South American myths. "The Sources and Authenticity of the History of the Ancient Mexicans" (*Univ. of Cal. Pub.*, vol. XVII, pp. 1-150) are dealt with by P. Radin, who in a measure seeks to vindicate the trustworthiness of aboriginal accounts of ostensibly historical character.

OTHER CONTINENTS. A valuable study of an unusual character is embodied in Martha W. Beckwith's "The Hawaiian Romance of Laieikawai" (*33rd Ann. Rept., Bur. Am. Ethnol.*). It presents not merely the original text and a translation of a lengthy Hawaiian tale, but also a detailed commentary together with an investigation of Hawaiian literary style and activity. Much of the material of Hawaiian literature is found to be traditional among other Polynesians. It mirrors the aristocratic polity of the Hawaiian, verse-making having indeed been practiced in the households of chiefs. The theme is usually the career of a hero whose supernatural powers are established in a series of contests. In some cases he is divine, in others a demigod, in still others a human being of exalted rank, and again he may be merely an ordinary man aided by spiritual helpers. Prose and poetry have developed along distinct paths. In prose there is connected narrative and considerable realism. Poetry embraces dirges, lyric songs, and eulogistic hymns. The latter are not built up as connected accounts of achievement but are ejaculatory panegyrics. The poems abound in symbolical allusions, antitheses, repetition, puns, riddles, and other stylistic devices.

F. Speiser, the explorer of the New Hebrides, has published a paper entitled "Kultur-Komplexe in den Neuen Hebriden, Neu-Caledonien u. den Sta.-Cruz Inseln" (*Archives suisses d'Anthropologie générale*, 1919, pp. 300-319). He discusses the data from the point of view of independent development versus borrowing and arrives at the conclusion that many traits have evolved spontaneously.

A result that, if verified, would revolutionize linguistic classification has been announced by A. Conrady (reported in *Anthropos*, XII-XIII, 702-708). Father Schmidt has connected the Malayo-Polynesian stock with certain languages of India and Farther India, merging them in a single "Austriac" family. Conrady extends the comparison to the Tibeto-Burman languages and arrives at the conclusion that the Austriac stock in turn is genetically related with all the languages of Farther India, with Chinese and Tibetan.

On the basis of a 12-years' residence in northern Luzon, C. R. Moas describes "Nabaloi Law

and Ritual and Kankanay Ceremonies" (*Univ. of Cal. Pub. in Amer. Arch. and Eth.*, vol. XV, nos. 3 and 4). The Nabaloi are the southernmost Igorot and, while sharing the general mode of life of their northern congeners, present interesting variations. There is a division into two castes on the basis of wealth, the rich lording it over the poor. Communal dormitories for boys and girls were once in vogue but are no longer so, and head-hunting likewise has become obsolete. The Nabaloi believe in a considerable number of spirits, whose cult is in the hands of the priests, those directing certain ceremonies being women. Most of the rituals are held for a curative purpose, the proper performance being first determined by divination. Sickness is conceived to result from the action of malevolent spirits or the craving of the souls of the dead for food and raiment. Two of the most important ceremonials which were formerly devoted to the celebration of a head-hunting raid and the cementing of peace, respectively, have assumed an altered significance, being now performed in order to cure or avert disease. Expensive ritual feasts are obligatory on the rich who wish to maintain their social status. Great importance is attached to the death ceremonies. In each case the spoken ritual consists of either a petition or a story that functions as a magical formula. The ceremonial scheme of the Kankanay confirms in its broad outlines to the Nabaloi pattern but exhibits greater local differentiation.

In two treatises on *Fêtes et chanson anciennes de la Chine* and *La polygamie sororale et le sororat dans la Chine féodale*, Marcel Granet develops facts and conceptions of general ethnological interest. He distinguishes as "sororate" the custom of marrying a deceased wife's sister, while the simultaneous marriage of several sisters is designated as sororal polygyny. In China about 25 centuries ago a nobleman was expected to marry wives belonging to a single family or bearing a single family name, but union with three sisters was tabooed. The orthodox allotment of wives comprised a woman, her younger sister, and her elder brother's daughter, all three being married by a single ceremony. The levirate was strictly forbidden, though connived at among commoners. A man and his elder brother's wife were not permitted to hold conversation. The feudal marriage law is supposed to have been superimposed on the simpler usages of the common folk, who were organized in local kin groups bearing a family name. Granet conceives these communes to have had connubial relations in pairs, each member of a pair exchanging its girls for those of the complementary group. The kinship nomenclature is suggestive in linking together father and paternal uncle, mother and maternal aunt, father's sister and mother-in-law, mother's brother and father-in-law, son-in-law and sister's son, respectively.

An important addition to ethnographic knowledge is offered in E. W. Smith's and A. M. Dale's two volume work on *The Ila-speaking People of Northern Rhodesia*. The Ba-ila, who correspond to other writers' Mashukulumbwe, live on the Kafue plains about 200 miles north of the Victoria Falls of the Zambesi. They are divided into a great number of matrilineal exogamous clans associated with totems which are not eaten by the group bearing the totem's name. Although the maternal uncle exercises some special

powers over his sister's children, a husband retains control of them in case of divorce since he has purchased his wife's issue with the bride-price. He has the usufruct of her body, but she holds property rights independently of him. Both the levirate and sororate are practiced and men also marry their cross-cousins but only the daughters of their paternal aunts. Besides the orthodox forms of permanent marriage there are also temporary exchange of wives and licensed cicisbeism. In addition to one's clan each individual also looks for assistance to his and her age-mates, i.e. those born or initiated in the same year. Fellow-members of an age-grade have the right of taking all sorts of privileges with one another, such as exercising ridicule or even hurling curses. Communities and lesser hamlets are governed by chiefs and headmen respectively, but chiefs are not absolute rulers, having definitely circumscribed prerogatives, such as allotting new land, admitting or excluding strangers, and exacting taxes for special purposes. Succession is not fixed, a council of elders selecting the fittest candidate from among the deceased chief's clansmen or sons. In judicial procedure oaths and ordeals figure prominently, the latter as either hot water or poison tests. The religious beliefs comprise faith in an impersonal power, in the transmigration of souls, in ghosts, divinities of varying rank, and a supreme deity named Leza who figures as the founder of many customs and is supplicated in times of drought and sickness. Below him are the communal gods, who are relied upon for success in war and protection against lions and pestilence. They are invoked jointly by all members of the community, while other spirits are associated exclusively with kin groups, husband and wife praying to distinct beings. Special spots are consecrated to the several gods but no effigies are made of them. On numerous occasions there are ceremonial offerings.

In a work on *Herkunft und Wanderung der Hamiten* the zoölogist L. Adametz attempts to solve the Hamitic problem through a study of the domesticated animals found among the Hamites. He argues that since the wild forms of the typically Hamitic sheep and goat, viz. *Ovis vignei cycloceros* and *Capra falconeri*, occur in Afghanistan, Beluchistan, and Northwestern India, this region must be regarded as the starting-point of Hamitic migrations. The long-horned ox of ancient Egypt is also regarded as a product of Hamitic domestication, having been bred from *Bos primigenius* on Egyptian soil.

A monumental three-volume work has been issued by F. Von Luschan on *Die Altertümer von Benin*. The author gives a detailed account of the Benin antiquities scattered over the world since the British punitive expedition. He stresses the essentially African character of the art products, but in corroboration of Frobenius' results assumes an ancient cultural connection between the western Sudanese and southern Europe. As regards the famous bronzes cast in the *cire perdue* manner of the Renaissance, Von Luschan points out that most of them contain very little tin.

In his "Etude ethnographique et anthropologique sur les Teda du Tibesti" (*L'Anthropologie*, XXX, pp. 115-135) P. Noel supplements Nachtigal's earlier notes on this Saharan people, especially with reference to social custom. Infant betrothal is found to hold sway and in case

of the boy's death before maturity he is superseded by a younger brother or paternal kinsman. Polygyny is common but the wives generally live in different localities visited by their husband, an arrangement consistent with the nomadic habits of the tribe. In the marriage ceremonial there is a pretense of capturing the bride, who is secluded for a period—four months, if a noblewoman—before she takes up the distinctively feminine labors of skin-dressing, matting and basketry. The avoidance rules are interesting. The son-in-law and his wife's kin avoid each other until the birth of a son, when they may exchange a few words. On the other hand, the wife speaks freely with her parents-in-law. The wife is not permitted to pronounce her husband's name and must not uncover her head before him.

EXPEDITIONS, MEETINGS, PERSONALIA. Toward the close of the year an ambitious scheme for the ethnological and archaeological exploration of Polynesia was launched through the generosity of Mr. Bayard Dominick and under the auspices of the Bishop Museum in Honolulu. The participants have been largely recruited from the United States. Drs. E. S. Handy and R. Linton have set out for the Marquesas Islands, E. W. Gifford and Wm. C. McKern to Tonga, and R. T. Aitken and J. F. G. Stokes to the Austral group. Not technically connected with this project but in consonance with its aims a somatological survey of Hawaiians has been undertaken by L. R. Sullivan, particular attention being directed to problems of miscegenation. A midsummer conference of scholars from different parts of the world was held in Honolulu to promote Polynesian research; American anthropology was represented by C. Wissler, A. M. Tozzer, and A. L. Kroeber.

In Canada field work has been resumed on almost ante-bellum scale, but in the United States it has hardly recovered that fortunate stage as yet. The Geological Survey of Canada has dispatched H. I. Smith to study the material culture of the West Coast tribes; C. M. Barbeau has resumed his intensive investigations of the Tsimshian; and there has been some archaeological work in the East by Wintemberg, as well as some ethnographic research in the Great Lakes region by Waugh. The United States National Museum sent Dr. W. Hough to work among the Hopi and Apache, while Dr. A. Hrdlicka of the same institution visited China, Japan, Korea, and Hawaii and N. M. Judd visited Chaco Cañon and Northwestern Arizona. Dr. J. W. Fewkes, chief of the Bureau of American Ethnology, resumed his archaeological labors in the Mesa Verde National Park; of his staff Dr. T. Michelson is continuing his investigation of Fox and other Algonkin tongues. N. C. Nelson of the American Museum of Natural History is engaged in archaeological work in the southwest. The Museum of the American Indian Heye Foundation has continued its support of local archaeological research under the direction of Messrs. M. R. Harrington, G. H. Pepper, and A. Skinner, and Prof. M. H. Saville has left to carry on Mexican investigations. Excavations of Seneca sites in Ontario county, N. Y., have been made by A. C. Parker, the archaeologist of the New York State Museum. Of European scholars, Dr. H. P. Steensby visited the lower St. Lawrence county in connection with historical studies bearing on early Norse exploration, and Dr. Karsten returned to Sweden after a several years' so-

jour among the Jibaro and Colorado of Ecuador. The British Mackie Expedition has been carrying on investigations in Uganda under the leadership of Rev. John Roscoe. Three months were devoted to the Bahima of Ankole, then a Bantu tribe inhabiting the mountains of Kigezi was visited, and finally the Bunyoro were studied.

The United States was visited by the two most eminent British representatives of the diffusionist point of view, Drs. W. H. R. Rivers and G. Elliot Smith, who lectured and exchanged opinions with their American colleagues. Anthropology has sustained the loss of Wm. Churchill, the well-known student of Polynesian linguistics and ethnography; of W. Radloff, Director of the Museum in Petrograd, the foremost investigator of the Siberian Turks; of Dr. S. A. Lafone Quevedo, the veteran Argentine ethnologist and linguist; and of the famous Italian anthropologist Rodolfo Livi, renowned for his *Antropometria militare*.

ANTIGUA. See LEEWARD ISLANDS.

ANTI-SALOON LEAGUE OF AMERICA.

Founded in 1895 by the coalition of the Anti-Saloon leagues of five States, this is a national federation of organizations whose object is the extermination of the beverage liquor traffic in the world. In 1920 it has 50 subsidiary State leagues and was working in coöperation with more than 40 other national temperance leagues. More than 1000 representatives conduct the work of the League. Despite the fact that the prohibition amendment to the Constitution had been passed, the League found a great deal of work necessary for its proper enforcement. The fight over the question of 2.75 beer was bitter, especially as the League had not obtained many favorable results in its efforts to prohibit this beverage. The League claims that the great harm in alcohol is the poisoning that it produces, and not the drunkenness, and that a small amount of alcohol each day leads to very serious and harmful consequences. The following survey was printed in the *Anti-Saloon Year Book*, showing what has happened to the erstwhile saloons and breweries: 500 breweries were manufacturing non-intoxicating cereal beverages; about 23 per cent of the breweries had been turned into ice factories and cold storage plants; others had been converted into oil refineries, canning factories, candy factories, vinegar plants, packing houses, creameries, beet-sugar factories, chemical factories, etc. The advent of prohibition had put out of business 236 distilleries, 1090 breweries, and 177,790 saloons. The League sent out a large number of questionnaires during the year as to the result of prohibition and as to how it is regarded by various interests. The results and a great deal of other information were published in the *Year Book* of the organization.

Reports from foreign countries showed in general that steps were being taken to curb the excessive drinking of intoxicating liquors. In Great Britain, however, there was a 60 per cent increase in 1919 of the amount of liquor consumed over the amount in 1918. The fact that a considerable number of European countries are dependent on wine as one of their principal products, makes it hard to introduce prohibition by any other than slow degrees.

The officers of the League for 1920 were Bishop Luther B. Wilson, president; Hon. S. E. Nicholson, secretary; Rev. P. A. Baker, general superintendent; Ernest H. Cherrington, general

manager of publishing interests. *The American Issue* is the official organ of the League, and there are 29 subsidiary and State organs. The publishing house and executive offices are in Westerville, Ohio, where three tons of literature are turned out daily. The legislative committee has its headquarters in the Bliss Building, Washington, D. C.

APHRODITE. See MUSIC, *Opera*.

AQUEDUCTS. The most notable projects of 1920 were those involved in the extensions of the water supply systems of New York and San Francisco. In the former city J. Waldo Smith, Chief Engineer, in his annual report stated that progress on the construction of the Shandaken tunnel of the Catskill water supply system for New York City had continued during 1919 and at the year's end all but one of the eight shafts had been completed and the tunnel heads turned. During the year 2356 linear feet of shaft were sunk and 1098 feet of tunnel were driven. A transmission line for the purpose of furnishing electrical energy to the various parts of the project had been constructed from a point near Kingston to the intake shaft at the Schoharie reservoir, a total distance of 50 miles.

During the year 1920 the contract for the Shandaken tunnel was assigned by the original contractors, the Degnon Contracting Company of New York City, to the Shandaken Tunnel Corporation, incorporated by the Ulen Contracting Corporation of New York, the Fidelity and Deposit Company of Maryland, and the National Surety Company, with a paid-in capital of \$750,000. This corporation was organized specially for completing the project which it took over towards the end of the year, with approximately \$2,000,000 worth of work completed. The seven construction and the one intake shafts had all been sunk and turned. The original contract was let to the Degnon Company Nov. 10, 1917, the contract price being approximately \$12,000,000.

SAN FRANCISCO—HETCH HETCHY PROJECT. This work advanced materially during the year 1920 both as regards the dam begun in 1919 (see YEAR BOOK for 1919, article DAMS) and the main tunnel to carry the water to San Francisco. At the site of the main Hetch Hetchy dam the Utah Construction Company had excavated both abutments from crest level down to water level, opened quarries, built tracks to bunkers, crushers, and screens and installed another incline, with a capacity of 40 tons, down to the floor of the valley. The entire foundation of the dam was expected to be exposed, and ready for concrete pouring early in 1921.

By the early summer of 1920 more than 3 miles of tunnel had been excavated on the Mountain Division of the Hetch Hetchy Aqueduct. The Construction Company of North America, which began operations on May 17th, had excavated almost half a mile of tunnel since taking over the city's forces. The validity of their contract was attacked in a taxpayers' suit which placed an injunction on the payment of \$276,776, the initial fee due the construction company, thus, as will be seen below, somewhat embarrassing the prosecution of the work.

Later in the summer the Construction Company of North America sublet the 18-mile contract to two well-known tunnel men. A. C. Dennis became responsible for 10 miles of the work on the west or Priest portal end and Rex C. Starr the 8 miles on the Early Intake end.

Mr. Dennis was in personal charge of construction on the 5-mile Rogers Pass tunnel for the Canadian Pacific Railway, where exceptional progress records were made. Mr. Starr had also gained a reputation for speedy work in tunnel driving. Later he assigned his contract. The following was the progress to the summer at each end of the tunnel headings where work was being carried on: Priest Portal, 6320 linear feet; Big Creek, west heading, 1400 linear feet; Big Creek, east heading, 1000 linear feet; South Fork, 4280 linear feet; Early Intake, 4000 linear feet.

However, work on the tunnels was shut down on August 26th by a strike of the tunnel workers, and, pending the outcome of the suit over the contract, was not resumed. This decision was rendered on Oct. 16, 1920, and new crews were then brought in and, beginning November 1st, the several headings were all being worked.

The Supreme Court of California decided that nothing in San Francisco's charter prevented the city from entering into a contract on a cost-plus fee basis such as that made with the Construction Company of North America for driving 18 miles of tunnel on the Hetch Hetchy project. The decision was of general interest as possibly applying elsewhere, where such contracts had been made. Accordingly in the *Engineering News-Record* a résumé of the features involved, supplied by M. M. O'Shaughnessy, city engineer of San Francisco, was printed as follows:

The contract embodies construction on the cost-plus plan, with the following modifications:

1. The contractor's fee is a flat sum fixed by competitive bidding and is payable in installments, including three annual advance payments which assist the contractor in financing his work.

2. While the contractor is required to secure and superintend the labor, and is given the right to "hire and fire" men, no change in wage scale can be made without concurrence of both the contractor and the board of public works. Materials and supplies furnished are purchased directly by the city after competitive bidding, in which the contractor himself may participate.

3. The contract contains a guarantee by the contractor as to maximum unit costs of work which were specified by him in his bid. If the actual costs exceed these bid costs, such excess is deducted from the unpaid balance of the contractor's fee. The method of determining the costs is set forth in detail in the specifications.

4. In order to insure the city's receiving the lowest possible bids both for contractor's fee and guaranteed unit costs, the board of public works was permitted to award the contract to the lowest bidder on either basis.

The contract has been in effect about six months, although payment of the contractor's fee had been withheld until the final determination of the suit. The system has worked very satisfactorily so far, and the City of San Francisco anticipated that the total cost will be less, by some \$2,000,000, than the lowest flat price bid received under alternative specifications at the same time.

SPRING VALLEY WATER SUPPLY. The City of San Francisco in addition to the Hetch Hetchy project was proposing in 1920 to acquire the properties of the Spring Valley Water Company, a private corporation which had supplied the city. The Railroad Commission of California began in March at the request of the city authori-

ties extended investigations of the properties of the company, and late in the year announced that it had placed on the same a valuation of \$37,000,000. The city authorities agreed to submit to the voters a proposition to acquire this valuable property by purchase, and the company on the other hand agreed to submit to its stockholders the proposition to sell at a price fixed by the commission. At the end of 1920 it was planned to hold in the following February a special city election to pass on the proposed purchase. A similar proposition to purchase the Spring Valley Water Company property in 1914 was defeated at a popular election, but the basic price then proposed figured in the 1920 negotiations with modifications in the way of depreciation and later additions. The 1920 valuation estimates also considered the cost to reproduce the plant and appurtenances not on prevailing costs but on average prices from 1914 to 1920.

With reference to the wisdom of the immediate purchase of the Spring Valley system by the city, the commission stated "There is no escape from the conclusion that the present supply of water for the city of San Francisco is dangerously near the point of insufficiency. Immediate steps to increase the supply should be taken. The water supply can be increased only in two ways: either by the city doing its own development in the immediate future or by creating conditions where the Spring Valley Water Co. can be put in a position to proceed with such development. In view of existing conditions it is not to be expected that the company is ready or able to raise the necessary new capital for construction and extensions and the city cannot afford to wait for an improvement of the urgent present water situation until the completion of the Hetch Hetchy system.

"With efficient operation and under reasonable water rates the purchase of the Spring Valley system will carry itself. It may be assumed that the Calaveras dam will be completed in the case of the purchase of the system by the city. The completion of the Calaveras reservoir will make available an additional supply of water sufficient to take care of the present urgent needs of the city. It is estimated that this addition will be sufficient to meet the demands of the city until the completion of the Hetch Hetchy system and supply the needs of a population in excess of 700,000."

WELLINGTON, NEW ZEALAND, PROPOSED AQUEDUCT. The city council of Wellington, the capital of New Zealand, during 1920 decided to expend about \$500,000 in cutting two tunnels through the hills near the city to bring water from the Orongorongo River, with the additional expenditure of \$1,119,295 for extra mains and other expenses to provide a water supply sufficient for a city of 130,000 people. The population of Wellington and its suburbs in 1920 was about 95,000. See WATER SUPPLY.

ARABIA. The large peninsula in southwestern Asia lying to the south of Syria, Mesopotamia, and the Persian Gulf, with an area estimated at 1,200,000 square miles, or excluding the Syrian desert and the Sinaitic peninsula, about 1,000,000 square miles, and a population variously estimated, the highest figure being about 7,500,000. There are great tracts of desert occupied only by Bedouin tribes which are nomadic in their habits, and in these regions a traveler may preceed many days without meeting

a person. The difficulty of determining the population even approximately cannot be overcome and according to some estimates there are only 4,000,000 people in the country. The northern sand belt and the great southern desert are uninhabitable. The people are found mainly on the northern edge of the northern sand belt, and in the hinterland of Yemen, the interior of Oman, and the highlands of Asir. In Central Arabia there are many oases, however, and these as well as the fertile districts on the coasts support settled communities. The country in 1919 was divided among the following political organizations, which, however, were not of a determinate character: The kingdom of Hejaz or Hedjaz with uncertain frontiers, but with a population of about 750,000. Historically and from the point of view of religion it is the most important part, as it contains the holy places and the sacred cities of Mecca (80,000) and Medina (40,000). It was formerly included in the Turkish Empire, constituting the vilayet of Hejaz. There is a railway terminating at Medina. Its chief port and capital is Jidda on the Red Sea (population 20,000). By the treaty with Turkey the independence of Hejaz was recognized.

The emirate of Nejd and Hassa is the greater of the two principalities in the central part of the country and the seat of the Saud dynasty whose great extension of power in recent years is noted below, under *History*. It sprang from the old Wahabite Empire founded in 1745. The capital is Riyadh.

The emirate of Jebel Shëmmar or Shammar, lying to the north of Nejd, was formerly under its control but broke away and maintained its independence under the Rashid family until the great war. Recently a reconciliation between this dynasty and that of Saud was reported, which again brought it under the Saud influence. Its capital is the Bedouin city, Hail, and the emir in 1920 was Adullah Ibn Mitah who succeeded at the assassination of his father in May of that year.

The principality of Asir is on the western coast between Hejaz and Yemen and its capital is Sabiyah in the south. In part of the region, especially in the highland country, the tribes are virtually independent.

Finally the imamate of Yemen is centred about Sanaa under a dynasty which traces its descent to the daughter of Fatima. Here there is a large cultivatable area and a considerable agricultural production. In 1920, the imam was Yahya Mohammed Hamid-ed-Din. Population of Yemen, about 1,000,000. Its capital is Sanaa, with a population of about 25,000, and its chief ports are Mocha and Hodeida. For mention of the other divisions which are found within the limits of Arabia, see the articles, ADEN, OMAN, and KOWEIT.

HISTORY. In preceding YEAR BOOKS an account has been given of the rise and history of the kingdom of Hejaz, which was founded during the war (1916) when Hussein, Sherif of Mecca, freed himself from Turkish power and was crowned king of the Hejaz. The new kingdom was supported by British arms and stood before the world as the chief power in Arabia. Almost all the discussion in the press during the war and afterward had to do with Hejaz and little was said about the remainder of the country. The kingdom of Hejaz, however, was not the

most important element in the Arabian world and its predominance in political discussions was probably due to the British interest and to the fact that most of the information came from British sources. The new state was a more or less artificial creation of the British, in that it could not have survived without British aid and a considerable British subsidy. Before the war the Turks ruled over the Hejaz, including the sacred cities of Mecca and Medina. They ruled also over Yemen, which comprised all Southern Arabia and is the largest of the Arab divisions, and they exercised a nominal authority in the provinces of Haasa and Kateef on the east coast. In Southern Arabia the power fell into the hands of one of the typical Arab conquerors before the war, Bin Saud, whose ruthless and able character secured him the throne and gave him power over a wider area of Arabia than any other chief. About this time—that is, to shortly before the commencement of the great war—a brotherhood of Mohammedan religious reformers, the Ichwan, animated by a fanatical spirit, began to extend its influence. This grew with great rapidity until by the end of the war they became the real power in the country. They accepted as their religious and political head, Bin Saud, whose power thenceforth depended on their support. Before the war the British had been in possession of the Persian Gulf, which was policed. They made treaties with various Arab tribes and pursued a policy which successfully checked the advance of Turkey and the extension of German influence in the surrounding regions. There was strong anti-British feeling in parts of Arabia during the first part of the war, especially owing to Persian influence. Bin Saud, however, took the side of the British and his prestige was so great that even during the disasters of the first Mesopotamian campaign there was no hostile movement against the British in Arabia. Bin Saud strengthened his power by pacific means, including reconciliation with Bin Rashid, the representative of the dynasty mentioned above whose rivalry with his own had disturbed the country for the greater part of a century, and forming an alliance with the tribes of the Shemmar region. British money, as noted above, financed the revolt of Hussein, Sherif of Mecca, and brought the Hejaz kingdom into existence. The Turks thus lost all of Arabia, and there was thenceforth no danger from either Turks or German influence in the peninsula. Thus in Arabia itself there were two principal chiefs, Hussein, King of the Hejaz, and Bin Saud. The former according to the reports of travelers was not a man of great strength or extended influence, but on the contrary was lightly esteemed by the Arabs. The latter on the other hand, who was ruling nearly the whole of the country, was described as a remarkably vigorous ruler whose prestige was high, but whose power as already said depended upon the support of the Ichwan. The King of the Hejaz at first was inclined to despise the untrained troops of these fanatics but when they won over some of the inhabitants of his country and difficulties arose resulting in a battle, the forces of the reformers easily routed the Sherif's army, though the latter was far better equipped. The leaders of the fanatics threatened to attack the King and declared that without any doubt they could overcome him. By certain observers their forces were believed to be invincible so far as any merely Arab enemy

was concerned; but Bin Saud insisted upon keeping the peace.

The situation after the war was briefly as follows: The British were supporting the King of the Hejaz and it was believed that in certain British quarters there was hope that he might be made caliph of the Mohammedan world upon the downfall of the Sultan. It was even said that a revolt on his part against the Sultan might not be objectionable to the British and that if it succeeded he would be generally recognized as his successor in the caliphate. On the other hand it was said that he was generally without influence in Arabia and in certain parts of the Moslem world was detested, as for example in India, where for some time the feeling had prevailed that it was a disgrace even to make pilgrimages to Mecca. Moreover, the general dislike of Mohammedans by the British naturally turned them against any protégé of the British authorities. This dislike was not founded upon reasonable criticism, but upon the pride of Mohammedans and their objection to being ruled by a people of alien race and faith. The position of the King of the Hejaz in 1920 was not believed to be secure. He had made the Ichwan his bitter enemies, and they would undoubtedly have already overthrown him, but for Bin Saud's intervention. The latter was also receiving a subsidy from the British government. It was a question whether he could maintain his prestige, which was said to depend on lavish expenditures of money in gifts.

In the autumn a special envoy was sent to Paris by the King of the Hejaz and at the same time it was planned to send special missions to the capitals of the other states of the Entente for the purpose of removing misunderstandings and strengthening the ties of friendship between the King and his allies. According to the representatives in Paris, the Hejaz government wished in every way the aid of the work of France in the East. According to the envoy King Hussein was earnestly seeking the friendship of France; his son, the Emir Faisal, had been sent on a mission by the King on a single occasion during the Peace Conference, but since then the Emir had acted only on his own account and the King was not responsible for acts committed by bands of nomads, who did not acknowledge his authority. For an account of Faisal's activities in Asia Minor and his relations with the French, see article, SYRIA. See also WAR OF THE NATIONS.

ARBITRATION, INTERNATIONAL. See INTERNATIONAL PEACE AND ARBITRATION.

ARBITRATION AND CONCILIATION. See LABOR ARBITRATION.

ARCHÆOLOGY. Although several years have passed since the closing of the war archaeological exploration has not been thoroughly organized as yet. There are however several important pieces of work to be recorded in the various lands around the Mediterranean. The purpose of this work was to bring to light any important burials which might have been concealed by the drift. More interesting, from the popular point of view at least, was the arrangement in the Museum of the remarkable models discovered in the untouched tomb of Mehenkewtre. These most completely illustrate the service demanded by the mode of life of the princely classes in ancient Egypt. The work of Petrie at Illahun concerned itself chiefly with clearing out the twelfth dynasty pyramid and

its surroundings. In the rubbish heap of the pyramid the excavators found the gold serpent which had been wrenched from the crown of Senusert II. The workmanship is fine, showing an inlay of colored stones and a head of lapis lazuli with eyes of garnet. In the tomb of a queen was found an unusual alabaster jar, 22 inches in height, bearing a magic inscription which states that all which is produced from the earth will be obtained from it. In the search of the contemporaneous cemetery the mastaba of the chief architect of Egypt, the builder of the pyramid at Illahûn, was found. Like those of the sixth dynasty it stood upon a hill with a chapel cut in the side of the hill. The front is colonnaded like the twelfth dynasty tombs of Beni Hasan. The most unexpected discovery was the small, untouched cemetery of the prehistoric period, dating from the fourth dynasty. In it were a hundred burials which show every stage from the plain open grave to the shaft tomb. Thirty different types were noted. The most important work of the Metropolitan Museum, noted above, was in the hill behind Shiekh 'Abd el-Kurneh (to the south of Deir el-Bahari). Here was found the eleventh dynasty tomb of the monarch Mehenkwtetre, a small chamber containing a complete set of funerary models all beautifully preserved. These show gardens with pools, fruit trees and covered walks, granaries, slaughter houses, carpenter shops, breweries, bakeries, boats, etc., in fact in these models we have illustrated the elaborate service demanded by the life of a prince of that day. The tomb was discovered during the work of clearing away the drift that had accumulated in the bays of the cliffs of Deir el-Bahari. In the Valley of the Tombs of the Kings, at Thebes, to the south of the entrance to the tomb of Menephtah, Lord Carnarvon and Mr. Carter found some alabaster jars of large size and of a new style. Most of them bore the cartouche of Menephtah while some belonged to the time of Rameses II.

At Carchemish in Northern Syria C. L. Wooley, acting for the British Museum, resumed the excavations begun in 1914, but interrupted by the war. Excavations were undertaken on the site of the double ring of the city walls. On the land side all the gates, the fortifications of the acropolis, as well as the great river wall which still holds back the Euphrates River were cleared out. The work has demonstrated that there are four periods of construction, and the results should throw light on the 100 sculptured slabs, etc., that were found before the war. In addition the excavators turned up new sculptures and inscriptions. A grave of the royal period was also discovered. At Ascalon, under the direction of Garstang, the Palestine Exploration Fund began its excavations on September 9th. Preparatory diggings brought to light two architectural statues and an imposing Victory standing on the earth. These had already been known in Turkish times. During this excavation was turned up a white marble statue of a kneeling girl of one quality. The search for the Temple of Fortune has been begun and extensive preparations have been made for the exploration of the Philistine mound.

At Mycenæ, in Greece, Wace, acting for the British School in Athens, has carried on a thorough examination of the circle of graves just within the Lion Gate. The investigation has shown that Mycenæ was already inhabited at

the end of the Neolithic age and was a flourishing city in the years reaching from 2000 to 1500 B.C. To the end of this period belong the graves within the circle. The latest of these graves date in the late Helladic period. Excavations on the acropolis have shown that the palace was of a much more extensive plan than is usually supposed. Evidence for at least two stories was discovered. It was also found that much later, after Cnossus had fallen, the city was fortified with a wall which was carefully carried around the circle of graves. At that time the enclosure was filled in, leveled, and surrounded by the double wall of slabs now seen there, and new gravestones placed in position to replace the earlier ones. Between this circle and the Lion gate a large building, probably a granary, was brought to light. In it were found a number of vases which fall stylistically between the Mycenaean and Geometric wares and thus fill in a gap in Greek pottery. The excavators also explored the well-known Treasury of Atreus, finding under the threshold of the main chamber a small deposit of gold leaf, beads, and ivories, together with a fragment of late Mycenaean ware. The tomb therefore may be dated in the period from 1400-1200 B.C. This is the traditional date for the dynasty of Atreus and goes to show that there is an element of truth in Greek legend.

At Cyrene, in Africa, work has been carried on. Inscriptions have been found which show that the temple thought to be that of Apollo was in fact dedicated to the emperor Hadrian. In the agora was found a circular building which served as a meeting place for the priestesses of Hera.

In Italy excavations have been conducted at Veii, Vetulonia, and Castellina in the Chianti Valley, near Florence. These have brought to light remarkable examples of Etruscan architecture, sculpture, and bronze work, e.g. bronze helmets from Vetulonia, a dancing faun from the same site, and a fine life-sized sixth-century Apollo in painted terra cotta from Veii.

ARCHITECTURE. As in 1919, any attempt to chronicle the architectural activity of 1920 finds itself inseparably bound up with considerations of building, as regards both labor and materials, and, in New York especially, as regards certain legislation respecting building.

Many buildings have been carried through to completion in spite of adverse conditions and high wages and high costs of material, but even more, especially in residential work, have been deferred or suspended until more favorable building conditions prevail.

Unsettled building conditions, as a matter of fact, have endured for a longer time after the Armistice than was generally anticipated, and it is only at the present writing in January, 1921, that a return to conditions in any sense normal can be recorded.

Manufacturers of building materials are reported as being rather cautious about 1921, in view of the general tendency of dealers to unload costly stocks in anticipation of probable price reductions. The willingness of distributors of building materials to take losses on stocks in hand reflects their aim to encourage a more general resumption of building activity early in 1921.

Building materials showing a decline in price as of January, 1921, include asphaltum, certain

kinds of face brick, window and plate glass, sheet-iron and plaster-board. In lumber, price reductions are also seen in ash, basswood, plain and quartered oak, North Carolina pine, studing, rafters, ceiling and partition lumber and all hardwood flooring, including yellow pine. The condition suggests a general house-cleaning on the part of dealers, in anticipation of lower manufacturing prices, and the manufacturer, realizing that decrease in material prices will stimulate building, is faced with the problem of developing his production resources in such a way as neither to overstock nor to be caught later in the year with production and supply inadequate to meet a great demand.

The diverting of materials and labor to construction work connected with the war naturally created certain conditions which are still with us as a post-war legacy—notably the housing problem. The high cost of war-time and post-war building at once involved the element of finance, and various legislative proposals of a remedial nature were made with a view to relieving the shortage of apartment houses and dwellings—especially acute in and around New York City. Many of the measures suggested were unfair to property owners, and when the banks were consulted there was found to be a great reluctance to finance building projects on account of the low return on the investment.

The State Legislature rejected a group of proposals presented by Governor Smith, and the reaction at Albany appeared to take the form of a statement that housing should be regarded as a Municipal concern, and not a State concern. Among numerous proposals in this group was that of New York City Municipal Loans for building purposes, and with it went the constructive proposal to constitute building loans and mortgages as exempt from taxation.

A committee on housing was appointed (the Lockwood Committee) and in its initial investigations of the entire question, it undertook to look into certain alleged combines for price maintenance among the building industries. As the investigation progressed, an astoundingly scandalous condition came to light. The work of the committee commenced in Oct. 20, 1920, and Samuel Untermeyer, the attorney, at the opening of the third session said:

"Now, what we intend to show is a banding together among the material men, first, in separate associations in each of 32 lines engaged in building materials, from the manufacturer down to the retailer; and then the banding together of the different associations under the head of the Building Materials Employers' Association; and then we propose to show that not only has labor been dragnetted into the Building Trades Council in many instances, but that employers have been dragnetted and forced into certain of these associations by the relation that exists between the Building Trades Council and the Building Trades Employers' Association."

In the course of testimony from a long list of witnesses, evidence came to light which disclosed a far-reaching and intricate condition of corruption, bribery, and coercion—a condition plainly making against the progress and normal expansion of building. Many indictments are called for, and at the present writing the hearings of the committee are still continuing and the final outcome of the investigations cannot be recorded.

On May 5, 1920, the annual convention of the American Institute of Architects was held in Washington, D. C. These conventions are of marked importance in that the reports of their several committees represent inquiries and investigations of nation-wide scope and significance, and the subjects assigned to the different committees are designed to be of great constructive aid to the entire architectural profession.

At this 53rd convention reports were received on (1) Education, with recommendation to extend the usual four-year course for students; (2) structural service; (3) small houses, a new committee being appointed to study the whole subject and problem of financing small houses; (4) competitions; (5) schedule of charges, considering the question of raising the architects' fee from 6 per cent to 8 per cent, referred back to the State Chapters for study during 1921; (6) jurisdictional disputes; (7) community planning.

Another interesting report was reviewed—the report of the American Institute's Post-War Committee, which was appointed to inquire into and report on conditions and problems of architectural practice as found to exist after the war. The accomplishment of this committee is of distinct interest, and so germane to the purpose of this review that the following notes are given at length from the *Journal of the American Institute of Architects*:

a. The committee received and tabulated under separate headings a mass of opinion, suggestion, and criticism from individuals and societies bearing on various phases of the problems confronting the architectural profession.

b. Establishment of a point of contact and machinery for coöperation between organized labor, building and engineers.

c. Establishment of a definite basis for co-operation between organized labor, building contractors, and engineers which, it is hoped, will be an opening wedge to more sympathetic understanding between these great elements in the building industry.

d. Laid foundations for closer association with the building industry through participation in the Conference of the National Federation of Construction Industries.

e. Placed an argument for Registration of Architects, with practical data for Registration Laws in the hands of organizations and individuals in nearly every state in the union.

f. Placed the question of the organization of State societies, together with an outline of the experiences of states having such societies, and also a form of Constitution and By-Laws in practically every State in the Union, through the membership of the Post-War Committee.

g. Started a larger body of architects thinking concurrently along formulated lines of study than ever before.

h. Developed a form of organization that has many features to recommend it as a workable machine for carrying on educational effort of national scope.

i. It has developed, through the effort of the special Post-War Committee of the Washington State Chapter a chart indicating desirable fields for investigation in the study of problems affecting the proposition of architecture.

j. It has laid the basis for an international professional relationship, by correspondence and interchange of documents and information.

The Post-War Committee further outlined several important subjects for future study and action—subjects of great importance to every practicing architect. These additional subjects are given as follows:

1. What should be the function of the American Institute of Architects?
 - a. A national organization of the profession. and a direct factor in economic and social life, or
 - b. A dignified academy, attainable only by a few, and dealing only with the internal ethics of the profession.
2. What should be understood by the term "Architect"?
3. Desirability of giving Local Chapters (of the American Institute of Architects) more authority in formulating Rules of Practice for the guidance of their members.
4. Creating sentiment in favor of State Registration Laws.
5. Parliaments of Building Institutes.
6. Relationship between Architects and Draftsmen.
7. Methods of organization of an architect's office.
8. Value of dignified publicity.
9. Remuneration for the architect's services.
10. Expense of estimating.
11. Schedule of charges.

As an instance of the activities of some of the State Chapters of the American Institute of Architects, "The Architects' Service Bureau of Minnesota, Inc.," should be of interest throughout the country. The members of this chapter, observing the offers of free plan service by lumber-yards, "plan factories" and other enterprises, conceived the idea of a coöperative effort to provide accurate, carefully thought-out plans for houses of 3, 4, 5 and 6 rooms. The work of this Minnesota experiment proved to be of such a constructive nature that it served as a basis for the plans subsequently developed by the Small House Committee of the American Institute of Architects.

Of actual architectural works, as was implied before, there are relatively few important examples to cite for 1920. Many buildings projected in 1919 have gone forward in their construction through 1920 and will be completed in 1921. Of these one of the most notable is the Cunard Building, in New York City (Benjamin W. Norris, architect). In Detroit work progresses on the Durant Building (Albert Kahn, architect), the largest office building ever erected. Its cost is estimated at \$8,000,000. The same architect also has the First National Bank of Detroit (Michigan), a \$4,000,000 building, and others totalling \$23,000,000.

The most important completion of the year was that for the Nebraska State Capitol, for which the winning design was made by Bertram G. Goodhue, of New York City.

There has been a more marked building activity in the Middle West than elsewhere in the United States, and the greater part of this has been in the industrial and commercial field. A number of hotels have been built, and a great many theatres (of the large motion picture type), while many public buildings have been held up due to limited appropriations which failed to cover the great increases in building costs.

While this country has passed no such wise resolution as France in the matter of war memo-

rials, forbidding construction until 10 years after the war, many have been designed, but not built. Building costs, again, are the reason. The plans for the great Victory Hall for New York City are among the war memorial works which are at present being held in abeyance.

It is reported that Whitney Warren, the prominent New York architect, has been invited to supervise the rebuilding of the civic buildings of Louvain, in Belgium. Reconstruction work in general progresses steadily in France, although it is obvious that many more years will elapse before the extensive damage of the destruction in the North of France will be fully achieved.

Great Britain is experiencing difficulties in solving post-war housing problems similar to our own—the high cost of building and the difficulty of getting building loans except at exorbitant rates of interest. Theorists are devising solutions which are based on re-distribution of population, but meanwhile the great industrial centres are suffering from increasing congestion.

It is generally believed by the architects of this country that building will begin to resume something of its pre-war trend in 1921, for while 1920 has been by no means barren of architectural activity, conditions have been far from normal. Under conditions which obtained during the war, and conditions which resulted from the war, it is by no means surprising that the progress of architecture both here and in Europe has been greatly retarded. See articles on HOUSING, CITY PLANNING, etc.

ARCTIC REGIONS. See POLAR RESEARCH; SPITZBERGEN.

ARGENTINA. A republic on the eastern coast of the southern part of South America. Capital, Buenos Aires.

POPULATION. There are fourteen provinces, ten territories, and one federal district, with a total area estimated at 1,153,119 square miles. The population according to the census of 1914 was 7,885,237. It was estimated January 1, 1919, at 8,411,000. No later figures for the population by provinces and other divisions were available than those given in the preceding YEAR BOOK, which were for January 1, 1918, as follows:

Buenos Aires	1,615,223
<i>Provinces</i>	
Buenos Aires (La Plata)	2,190,876
Santa Fé	947,804
Córdoba	766,875
Entre Ríos (Paraná)	444,991
Corrientes	357,026
San Luis	124,387
Santiago del Estero	285,681
Tucumán	354,545
Mendoza	298,225
San Juan	127,775
La Rioja	83,146
Catamarca	106,500
Salta	147,537
Jujuy	77,990
<i>Territories</i>	
Misiones (Posadas)	57,544
Formosa	20,399
Chaco (Resistencia)	48,599
Pampa Central (Central Acha)	111,887
Neuquén (Chos Malal)	30,474
Río Negro (Viedma)	44,963
Chubut (Rawson)	25,838
Santa Cruz (Gallegos)	10,882
Tierra del Fuego (Ushuaia)	2,527
Los Andes (San Antonio de Los Cobres) ...	2,572
Total	8,284,266



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THE GENERAL MOTORS BUILDING, DETROIT
Said to be the Largest Office Building in the World

The capital and largest city is Buenos Aires, with a population estimated September 1, 1918, at 1,637,155; the second city is Rosario, with a population estimated in 1918 at 235,000; other large cities with recent estimates of population are: Cordoba, 156,000; La Plata, 119,000; Avallaneda, 105,000; Tucuman, 100,000; Santa Fé, 60,000; Mendoza, 62,000; and Bahia Blanca, 75,000.

EDUCATION. Elementary education is free and subsidized by the general and provincial governments. It is secular and compulsory between the ages of six and fourteen. At the close of 1919 the schools numbered 9268 with an enrollment of 1,190,231 pupils and 36,615 teachers. Secondary education is controlled by the general government which maintained 37 national colleges with 11,022 pupils and 1244 teachers; 37 special institutions with 11,261 students and 897 teachers. Besides these, there are 59 military schools, 82 normal schools, and 79 schools annexed to normal schools; the universities of Buenos Aires, La Plata, and Cordoba, whose students numbered respectively, 10,404, 2835, and 5506; and the two provincial universities of Santa Fé and Tucuman. A popular university was in process of organization in 1920 with departments of philosophy, law, history, science, letters, medicine; foreign languages, etc. The budget for education in 1919 totaled 57,626,228 paper dollars.

In 1920 it was planned to establish at Rosario the National University of the Littoral, with complete courses in technical instruction covering a study period of five years, three of which were to be devoted to general scientific studies and two to the study of special subjects. The aim of the university was to be the preparation of experts in mechanical, electrical, construction, and civil-engineering work. It was to take the place of the industrial school which was formerly in operation in Rosario.

PRODUCTION. Agriculture and stock-raising are the main sources of wealth, the area for agricultural and pastoral use being placed at over 400,000,000 acres, which, however, was only conjectural. There are still large tracts of lands that have not yet been disposed of in the territories, estimated at an acreage of nearly 238,000,000 and suitable for pastoral uses. These are sold or in certain instances are given free of charge to colonists. It has been estimated that about 10,000,000 acres of the cultivable portion required irrigation. The following table shows the acreage of the leading crops for 1918-19 and 1919-20.

	Acreage	
	1918-19	1919-20
Wheat	17,175,000	15,132,500
Oats	3,015,000	1,327,500
Flax	3,456,625	3,563,000

The following table gives the official statistics of cultivation, production, and exports of wheat, maize, linseed, and oats for three agricultural years:

Products	Area Acres	Production Met. tons	Exports Met. tons
Wheat:			
1916-17	16,088,967	2,180,400	897,622
1917-18	17,581,477	6,086,445	2,029,419
1918-19	16,976,068	5,015,000	3,258,259
Maize:			
1916-17	8,968,851	1,494,600	896,115
1917-18	8,715,377	4,335,000	647,657
1918-19			2,374,721

Products	Area Acres	Production Met. tons	Exports Met. tons
Linseed:			
1916-17	3,207,411	102,406	140,168
1917-18	3,233,600	497,578	391,053
1918-19	3,419,059	705,000	840,272
Oats:			
1916-17	2,525,406	487,850	270,761
1917-18	2,854,055	1,100,000	583,536
1918-19	2,980,075	840,400	331,350

The above figures of exports each cover the 12 calendar months of 1917, 1918, and 1919, respectively. See AGRICULTURE.

As no coal is mined in Argentina the country is dependent upon the United States and England, but its scarcity will be seen from the fact that only 707,712 tons were imported in 1917, and 821,974 tons in 1918, as against 4,046,278 tons in 1913. The railway, industrial, and domestic necessities of the country suffered severely during the war, not only from the scarcity and the abnormal prices of coal itself, but also from the resulting speculation in quebracho and algarroba firewood, in the charcoal (the poor man's fuel) derived from these woods, and in Argentine petroleum as fuel oil. Coal rose from \$31 per ton at the beginning of 1917 to \$50 at the middle of 1918, wholesale. The woods used for firewood and charcoal are quebracho and algarroba; it requires about 2½ tons of quebracho to produce the calorific value of 1 ton of coal.

Petroleum is the most important of the mining products of Argentina. During the war, wolfram was in considerable demand and at high prices, while mica was also sought by one or two concerns throughout the Republic. Copper has been produced in a desultory way for limited periods in the past. The provincial governments of Argentina possess the control of mines in the respective provinces as a result of the provisions of the national constitution, while those in the national territories are under the direct control of the national government. Mining concessions, however, are regulated in all cases by the mining code of the republic.

COMMERCE. Exports and imports for 1918 in gold pesos were, respectively, 801,466,488, and 500,602,752. The following table shows the total Argentine foreign trade, the sum of the imports and exports, by countries, for the years 1913, 1917, and 1918, values being expressed in gold pesos:

Countries	1913 Pesos	1917 Pesos	1918 Pesos
Australia	1,204,292	33	32,953
Aus.-Hungary.	10,469,727	9,796	1,292
Belgium	60,993,779	96,036	159,009
Bolivia	1,511,964	1,530,244	2,940,217
Brazil	37,006,045	60,696,121	82,720,118
British pos...	9,885,716	4,406,795	6,363,535
Canada	1,944,180	492,832	1,028,595
Chile	2,921,682	8,097,215	16,978,047
Cuba	2,011,585	2,757,988	3,549,993
Denmark	1,027,261	4,169,563	1,361,871
France	85,324,939	95,171,878	139,006,649
French pos...	354,292	18,959,352	4,504,310
Germany	146,135,401	294,655	221,628
Italy	62,469,296	55,237,910	60,289,724
Japan	1,040,756	5,429,851	18,014,405
Mexico	1,720,078	6,093,701	5,406,428
Netherlands ..	29,093,152	7,541,152	2,115,591
Norway	3,819,493	9,434,787	5,137,963
Paraguay	4,717,811	8,574,213	12,548,383
Peru	6,976	1,582,764	4,284,656
Portugal	1,265,328	758,387	1,053,711
Russia	1,180,053	1,480	15,399
South Africa..	268,322	2,055,393	6,778,091
Spain	19,757,409	36,627,515	65,595,441
Sweden	4,830,267	4,691,239	7,734,974
Switzerland ..	3,236,376	5,344,018	3,229,695

Countries	1913 Pesos	1917 Pesos	1918 Pesos
United King.	283,328,542	243,831,809	430,841,381
United States	97,601,693	299,355,684	334,658,568
Uruguay	10,528,976	17,665,430	19,549,226
All other coun- tries and to order.	129,727,764	34,583,386	65,917,387
Total	1,015,383,105	930,491,227	1,302,069,240

FINANCE. The unit of currency is the peso or dollar (gold) with a value of 96.475 cents. But though the country theoretically is on a gold basis, the money in circulation is chiefly paper pesos or dollars, which have a value under the conversion law of 1899 of 44 per cent of the gold peso or 42.449 cents in American currency. The chief items of the budget for 1920 were as follows:

Revenue	Dollars Paper
Imports	97,000,000
Internal taxes	80,000,000
Income tax	38,000,000
Patents	6,000,000
Stamps	25,000,000
Total (including all revenue)	428,244,700
Expenditure	Dollars Paper
Congress	4,790,260
Ministry of:	
Interior	54,728,068
Foreign Affairs and Worship	4,295,534
Finance	16,325,164
Public Debt	124,006,484
Justice and Education	75,861,814
Army	35,792,572
Navy	31,163,026
Agriculture	10,255,880
Public Works	13,698,875
Pensions, etc.	17,414,244
Public works	25,619,900
Subsidies	11,825,304
Grand total	428,134,973

The external debt January 1, 1919, was 671,336,118 paper pesos and the internal debt 642,791,606 paper pesos.

In the budget for 1921, the estimated expenditures were 482,654,460 pesos, currency. The principal items in pesos were as follows: National Congress, 5,274,260; foreign relations and worship, 4,941,074; treasury, 18,246,600; public debt, 124,306,484; public instruction, 88,327,493; war, 44,141,337; marine, 36,405,117; agriculture, 10,515,860; public works, 14,364,835; pensions, retirements, etc., 17,641,284; public improvements, 45,814,284, and subsidies and charity, 13,195,168.

COMMUNICATIONS. During 1920 measures were taken to extend certain of the Argentine railway systems. The government of the Province of Corrientes granted a concession to an American syndicate, known as the "Ferrocarril Colonista Corrientino," to construct a railway line in that province and to exploit it for 50 years. The government reserved the right of expropriating the permanent way, rolling stock, and other assets of the concern at any time upon payment of the real value plus a premium of 20 per cent. Furthermore the stations were to be located at places selected by the government and in order to prevent land speculation the ground adjoining the stations was to be subdivided and offered for sale at prices determined in advance. An important extension put under way during the year was that of the Pacific Railway of Argentina from Stroeder to Carmen de

Patagones, a distance of 40 miles. It was planned to construct a further extension to connect this line and the Southern Railway with the government lines in the vicinity. The railways open to traffic on January 1, 1919, had a mileage at 22,578 of which 3816 (18 per cent) belonged to the state. At that time capital invested in Argentina railways was placed at 1,254,795,500 gold dollars. In 1918 the vessels entered at all Argentina ports numbered 45,072 with a tonnage of 17,483,482, and those cleared, 44,845, with a tonnage of 17,334,850. At the beginning of 1918, the post offices numbered 3461 and the telegraph lines in 1915 had a total mileage of 43,153, of which 23,978 were national lines. No later figures for post offices and telegraphs were available than those given in the preceding YEAR BOOK.

ARMY AND NAVY. Service is compulsory in the national militia on all citizens between the ages of twenty and forty-five. The country is divided into five military districts, each of which must provide a complete division of the first line and also a reserve division. The active strength of each division is fixed at about 20,000 men and the reserve strength at about 300,000. One-half are of the first line and one-half of the special reserve. Measures have been taken to organize a territorial reserve. The navy included two large dreadnoughts laid down in 1917, *Moraneo* and *Rivadavia* of 27,940 tons each; two pre-dreadnoughts of 2336 tons each; and four armored cruisers and one light cruiser, besides various destroyers, torpedo boats and miscellaneous craft. The personnel varied from 5000 to 6000 men. See NAVAL PROGRESS.

GOVERNMENT. The form of government is republican and the executive power is vested in a president, elected for six years by electors chosen by the fourteen provinces. He is ineligible for reelection. The President is commander in chief of the army and navy and appoints to the higher offices in the respective departments. The government has a responsible ministry or cabinet consisting of eight members, namely, secretaries of state, for the interior, foreign affairs, finance, war, justice and public instruction, agriculture, marine, and public works. Legislative authority is vested in the national congress, which consists of two houses, the Senate and the House of Deputies. The Senate has thirty members, elected by the legislatures of the provinces and by a special body of electors in the capital. The deputies number 120 and are elected by the people, in a proportion, according to the constitution, of one for every three inhabitants. One-third of the Senate is renewed every three years, and one-half of the House every two years. The President in 1920 was Señor Hipolito Irigoyen, who assumed office, October 12, 1916, and the Vice-President was Dr. Bento Villanueva.

HISTORY. A sharply contested electoral contest ended March 7th in the triumph of the Radicals over the combination of opposing groups. The Radical party, to which President Irigoyen belonged, elected 102 members, the Conservatives 46, and the Socialists 10. Various disturbances accompanied the campaign including strikes and anarchist demonstrations. In the city of Buenos Aires, the headquarters of some twenty anarchist groups were closed and 200 arrests were made. Argentina was represented in the Geneva meeting of the League of the Nations by her foreign minister, Señor Pueyrredon. At a meeting of

leading importers at Buenos Aires, October 20, it was voted that imports from the United States should be limited to absolute necessities until the rate of exchange improved. Soon after the meeting the rate stood at 133. Labor troubles were reported at several points and a number of persons were killed in conflicts between strikers and the police. In the autumn there was a shortage of bread and some of the mills closed for lack of grain. On November 15th a number of shops were closed in the state of Cordoba on account of the heavy taxes. The treaty with the United States on the subject of commercial travelers was signed October 22nd. Similar treaties had been signed with several of the South American states. A bill was introduced in the Chamber of Deputies in the autumn providing for compulsory farming, that is to say, the conscription of the young men not called into naval or military service in order that they might form an agricultural army. Toward the close of the year a "graft" investigation found that the capitol building in Buenos Aires had been constructed at an undue expense, the sum of 5,500,000 pesos having been unnecessarily expended. Measures were taken toward the solution of the immigration problem. For three years the number of emigrants had exceeded that of immigrants and plans were under consideration for the attraction of immigration to the country. At the close of the year Austria was taking steps to promote the emigration to Argentina of her working classes, by means of opening credits for intending emigrants. A serious earthquake on December 17th destroyed several towns on the slope of the Andes causing a great loss of life and property. The early reports indicated that hundreds had been killed and pronounced the shock the most serious since that of 1869.

At the close of the year plans were under consideration for the owning and operation of a steamship line by the government, which raised the general question whether the state ought to compete with private capital in commercial undertakings. Opponents argued that both for political and economic reasons the government ought not to enter commerce, and declared that the merchant marine had served the country efficiently during the war. On the other hand, it was argued that the government was now paying hundreds of millions to the merchant marine of other countries and that vessels bringing freight to Argentine ports could find no adequate return cargoes. Government ownership in the present situation would obviate these difficulties.

ARIZONA. POPULATION. According to the preliminary report of the census of 1920, there were 333,903 residents in the State, Jan. 1, 1920, as compared with 204,354 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 10,816, an increase of 17.2 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Prod., bu.	Value
Corn	1920	28,000	644,000	\$1,095,000
	1919	30,000	900,000	1,800,000
Oats	1920	13,000	481,000	462,000
	1919	13,000	494,000	494,000
Wheat	1920	36,000	864,000	2,264,000
	1919	38,000	950,000	2,138,000
Barley	1920	20,000	680,000	952,000
	1919	25,000	875,000	1,225,000

Crop	Year	Acreage	Prod., bu.	Value
Hay	1920	137,000	*392,000	11,170,000
	1919	177,000	*657,000	13,021,000
Beans	1920	15,000	75,000	308,000
	1919	20,000	120,000	540,000
Potatoes	1920	5,000	450,000	855,000
	1919	5,000	350,000	682,000
Sweet potatoes	1920	1,000	150,000	345,000
	1919	1,000	150,000	375,000
Cotton	1920	237,000	*110,000	16,500,000
	1919	107,000	*60,000	15,261,000

* Tons. * Bales.

MINERAL PRODUCTION. The following table shows the production of base and precious metals for 1920 and 1919, according to the estimates of the United States Geological Survey:

Gold, Dollars	Silver, Ounces	Copper, Pounds	Lead, Pounds	Zinc, Pounds
1920—				
4,943,000	6,093,251	559,235,000	14,000,000	1,457,000
1919—				
4,506,413	5,266,605	535,100,844	10,203,078	1,717,000

The value of the above metals in 1920 was about \$107,725,000, a decrease of nearly \$3,433,000. The quantity of all these metals except zinc increased, but the total output for 1919 had been far below the average for the previous five years. In spite of the increase in the quantity of most of the metals and in the total value of the gold, silver, and lead, the combined value of all the metals was less on account of the low price of copper. During the last two months of the year, when the price of copper fell below 15 cents a pound, many of the large copper companies again curtailed production. The increase in the value of the gold output was a result of the slight improvement in the production of gold from copper ore and the steady output from the Oatman region. More than half the output of gold from Arizona came from gold ores in the San Francisco district, in Mohave County. The mine output of silver increased in value from \$5,898,598 to about \$6,032,000. The value of the output of copper decreased from \$100,086,757 in 1919 to about \$95,741,000 in 1920, owing to the decrease in the average price of copper from 18.6 cents to about 17.12 cents a pound. Most of the large smelting plants produced more copper than in 1919, but no effort was made to reach the totals of 1918, for the demand for the metal was not so great as had been expected. Toward the end of the year the price of copper decreased so much that many of the large mining companies operated at a loss. The mine production of lead in Arizona increased in value from \$540,763 to about \$1,147,000. The output of recoverable zinc decreased from 1,717,000 pounds in 1919 to about 1,457,000 pounds in 1920. The value of the output of recoverable zinc decreased from \$125,341 to about \$118,000.

TRANSPORTATION. All corporate activities in Arizona are under the scrutiny and partial direction of the Arizona Corporation Commission, an elective body of three members. Thus are included railroads, automobile lines, and mining and other incorporations, though taxation is under charge of the State Tax Commission. The railroads of Arizona have a mileage of 2429. Two main lines cross the State. The extensions and branches mainly are dependent upon the mining industry. These in 1920 were limited to a 72-mile lumbering road in northeast Arizona

and to a 6-mile agricultural spur near Phoenix. The 26-mile narrow-gauge line to Jerome was abandoned, transportation being otherwise supplied, and service was cut on a number of lines on account of the decline in the copper-producing industry.

FINANCE. The total receipts of the fiscal year 1920 were \$8,747,419.02, of which \$5,641,440.77 was from direct taxation. On hand at the end of the fiscal year, \$1,974,654.53. The State's indebtedness was \$869,972.43. The counties had outstanding bonds amounting to \$1,967,804.87. The cities' indebtedness, limited to Prescott, Tombstone, and Tucson, amounted to \$130,497.99. The gross indebtedness of the State, including the cities, was \$2,968,275.29, with a credit of \$423,951.70 in funds.

EDUCATION. The school population numbered 85,213; pupils enrolled, 70,288; school districts, 473; teachers, 1955. The high schools numbered 30, with an enrollment of 5597, and with 156 teachers. The two normal schools had 884 students. Average cost per capita of enrollment: Common schools, \$71; high schools, \$181. Salaries of teachers in the common schools: Average male, \$164.86; female, \$118.77. Gross expenditure for common schools during the fiscal year, \$4,836,599.43, distributed as follows: High schools, \$789,754.47; vocational training, \$99,255.20; normal and high school military training, \$6,401.69.

LEGISLATION. A special legislative session of one day was held, February 12, called for and devoted only to approval of the national woman suffrage constitutional amendment.

ELECTIONS. The vote for President was as follows: Harding, 37,016; Cox, 29,546; as compared with the following in 1916: Wilson, 33,170; Hughes, 20,524; Benson (Socialist), 3174; Hanly (Prohibitionist), 1153. In the elections for governor, the votes were: Campbell (Republican), 37,249; and Simms (Democrat), 31,682.

CHARITIES AND CORRECTIONS. Penitentiary, Florence; Expenditures, \$165,741.95; number of inmates, 324. Industrial School, Fort Grant: Maintenance, \$47,995.06; Improvements, \$77,691.92; number of inmates, 107. Pioneers' Home, Prescott: Expenditures, \$35,250.84; number of inmates, 65. State Hospital for the Insane, Phoenix: Expenditures, \$195,834.34; number of inmates, 553.

OFFICERS. Governor, Thomas E. Campbell; Secretary of State, Ernest Hall; Auditor, Charles W. Fairfield; Treasurer, Raymond Earhart; Attorney-General, W. J. Galbraith.

JUDICIARY. Supreme Court: H. D. Ross; A. C. Baker; A. G. McAllister.

ARIZONA, UNIVERSITY OF. A co-educational State institution at Tucson, Ariz.; founded in 1885. The enrollment for the summer session of 1920 was 78; for the regular session, 1088 (676 men and 412 women), making a total in all courses of 1616 (eliminating duplicates). The faculty numbered 117 of whom 20 had been added in the course of the year. The income was \$836,415.85. The library contained 32,600 volumes. Recent additions to the plant were, besides the women's dormitory and the steward's observatory, mentioned in the preceding YEAR BOOK, the Home Economics Practice House and the Green House for agricultural experiment stations. The university comprises a college of letters, arts, and sciences; a college of mines and engineering; and a college of agriculture; it also

maintains a correspondence course. President, Rufus Bernhard von Kleinsmid, Ph.D.

ARKANSAS, POPULATION. According to the preliminary report of the census of 1920, there were 1,752,204 residents in the State Jan. 1, 1920, as compared with 1,574,449 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 232,602, an increase of 8.3 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Prod., bu.	Value
Corn	1920	2,360,000	55,224,000	\$53,567,000
	1919	2,407,000	43,326,000	71,055,000
Oats	1920	352,000	8,800,000	6,864,000
	1919	320,000	7,040,000	6,195,000
Wheat	1920	126,000	1,197,000	2,274,000
	1919	280,000	2,680,000	5,373,000
Rye	1920	4,000	40,000	88,000
	1919	4,000	38,000	76,000
Tobacco	1920	800	*480,000	149,000
	1919	800	*456,000	160,000
Hay	1920	852,000	^b 1,178,000	18,804,000
	1919	782,000	^b 1,086,000	22,189,000
Peanuts	1920	16,000	416,000	973,000
	1919	19,000	665,000	1,556,000
Rice	1920	181,400	8,889,000	11,645,000
	1919	147,000	6,468,000	15,523,000
Potatoes	1920	31,000	2,418,000	4,232,000
	1919	32,000	2,592,000	5,314,000
Sw't potatoes	1920	49,000	5,145,000	5,402,000
	1919	51,000	5,100,000	5,865,000
Cotton	1920	2,862,000	^c 1,160,000	77,140,000
	1919	2,725,000	^c 884,000	160,974,000
Cowpeas	1920	86,000	430,000	1,054,000
	1919	75,000	225,000	652,000
Sorghum syrup	1920	42,000	^d 3,780,000	3,969,000
	1919	32,000	^d 1,920,000	1,978,000

* Pounds. ^b Tons. ^c Bales. ^d Gallons.

TRANSPORTATION. In 1920 the total mileage of the railways of the State was 5144. By act of the General Assembly in 1919 the Arkansas Corporation Commission was created, to enter upon its duties Jan. 1, 1921. It was to consist of three members appointed by the Governor, to hold office for two, four, and six years respectively, and its jurisdiction extended over common carriers, telegraph and telephone companies, gas and electric light companies, and all other public service corporations.

EDUCATION. The school population in 1920 was 676,169; enrollment 483,172; daily attendance 326,053. The teachers numbered 10,947 and the general average of salary was \$72 a month: White male teachers received \$90 per month; white female, \$70; colored male, \$61; and colored female, \$52.

FINANCE. According to the report of the Treasurer for the year ending June 30, 1920, the total receipts were \$6,124,636, and the disbursements amounted to \$6,215,015, leaving a balance in the treasury of \$111,482. The total debt at the close of 1920 was as follows: State school bonds, \$1,134,500; university endowment bonds, \$141,666.67; State notes held by outside persons, \$750,000; current indebtedness of State penitentiary, \$342,000; farm note indebtedness of State penitentiary, \$158,832.

CHARITIES AND CORRECTIONS. Charitable and correction institutions of the State are as follows: Hospital for Nervous Diseases, at Little Rock (population, 1873); Deaf Mute Institute, located at Little Rock (pupils, 330); Blind School, at Little Rock (pupils, 116); Confederate Home, at Sweet Home (population, 156);

Tuberculosis Sanatorium, at Booneville (patients, 176); Farm for Women, at Jacksonville (inmates, 13; opened for inmates, June 20, 1920); Boys' Industrial School, at Pine Bluff (population, 121); Girls' Industrial School, at Alexander (inmates, 20; opened for inmates, March 24, 1919); State Penitentiary, at Little Rock, Ark., and with farms at Tucker and Cummins (prisoners, 728).

ELECTIONS. The vote for President was as follows: Cox, 105,618; Harding, 69,874. The vote for Senator was: Caraway (Democrat), 126,477; Cole (Republican), 65,381. The vote for Governor was: McRae (Democrat), 123,604; Townsend (Republican), 46,339; Busler (Socialist), 4543; Blount (Negro), 15,627. The vote on constitutional amendments gave a majority for the initiative referendum, equal suffrage, and increase of the Supreme Court; but it was insufficient to carry the amendments, as the majority of the total vote cast at the election for Governor was required.

OFFICERS. Governor, Thomas C. McRae; Secretary of State, Ira C. Hopper; Attorney-General, J. S. Utley; Treasurer, Joe Ferguson; Auditor, James Guy Tucker; Adjutant-General, Joe S. Harris; Superintendent of Public Instruction, J. L. Bond.

JUDICIARY. Supreme Court: Chief Justice, E. A. McCulloch; assistant justices, Carroll D. Wood; J. C. Hart; Frank G. Smith, T. H. Humphreys.

ARKANSAS, UNIVERSITY OF. A co-educational land grant State institution, at Fayetteville, Ark.; founded in 1871. There are colleges of arts and sciences, education, engineering, agriculture (including an experiment station), and medicine. The last-named is situated at Little Rock. The enrollment for the summer session was 556 and for the fall session, 1015. The faculty numbered 85. The income for the year was \$315,766.15. There were 32,300 volumes in the library. President, John Clinton Futrell.

ARMAGH, JOHN BAPTIST CROZIER. Archbishop of British prelate, died April 12th. He was born April 8, 1853, and educated at Trinity College, Dublin, where he took honors. In 1887 he was made Canon of Down Cathedral and in 1896 Canon of St. Patrick's National Cathedral. From 1893 to 1897 he was chaplain to the Lord-Lieutenant of Ireland. He became a bishop in 1897 and was appointed Archbishop of Armagh in 1911.

ARMENIA. Before the war the term Armenia was indeterminate, being sometimes applied to the territory occupied by the Armenians within the former Turkish Empire and sometimes to the whole country in which the Armenians were the dominant race element, and which was partly in Russian territory. The Armenians of the Turkish Empire made up the minority in the five vilayets of Erzerum, Tiflis, Kharpout, Diarbekr, and Sivas and were slightly in the majority in the vilayet of Van. It was estimated that they formed about 38.9 per cent of the population of these regions. Their present number is unknown owing to the massacres, deportations, and emigrations. As to the Armenians in Russia, they are now mainly included in the Armenian republic and were estimated in 1917 at 1,293,000. For the varying accounts of the massacres and deportations and the varying estimates of the losses thereby, see preceding YEAR BOOKS.

THE ARMENIAN REPUBLIC OF ERIVAN, proclaimed in May, 1919. The events immediately preceding the establishment of the present Armenian Republic may be briefly summarized: In Trans-Caucasia in the former Russian Empire the three main peoples were the Armenians, the Georgians, and the Tartars. On April 22, 1918, the Diet of Trans-Caucasia declared its independence of Russia, under the title of the Federal Republic of Trans-Caucasia, comprising Georgia, Armenia, and Azerbaijan. It had refused to recognize the Bolsheviks from the first and had formed a provincial government at Tiflis in February, 1918. This new federal republic soon split up into its three national parts, Georgia and Armenia declaring their independence. In May, 1918, the Armenian Republic was constituted in the territory comprising the southeastern frontiers of the Trans-Caucasian division of the Russian Empire, and in January, 1920, its independence was recognized by the Allies. The constitution was to be formed by a constituent assembly which was not only to make the fundamental law for this region but also for Turkish Armenia as soon as its limits could be determined. Thus the Armenian Republic in the year 1920 was a fragment of the former Russian government and was awaiting consolidation with the Armenians of the former Turkish Empire whose limits had not been fixed and were subject of discussion throughout the year (see WAR OF THE NATIONS). Its area was placed at 26,130 square miles. Various boundaries for Turkish Armenia were proposed, some of which would bring the total area of the state after adding the Turkish portion to about 80,000 square miles and others would bring the total area as high as 170,000 square miles. The population of the Armenian Republic was placed in 1917 at 2,159,000, of whom 1,416,000 were Christians. Most of the others were Mohammedans. After 1917, there was a great shifting of this population, owing chiefly to the departure of a portion of the Mohammedan element and the return of about 300,000 Armenians. The chief cities in the Republic are Erivan (90,000) and Alexandropol (50,000). Measures for nationalization were taken after the separation from Russia, and Armenian became the official language and the language of the schools. Compulsory military education was introduced. See AGRICULTURE.

The mining industry of the Armenian Republic was represented by 22 copper-ore, rock-salt, and iron-pyrite enterprises, 18 of which exploited old mine workings. Seven copper smelters comprised the metallurgical industry of the country. The average annual production during the years 1911, 1912, and 1913 was as follows: 13 mines produced 154,900 metric tons of copper ore; 4 mines 10,000 tons of iron pyrites; 5 mines 25,400 tons of rock salt; and 7 smelters 6614 tons of copper metal. The first railway dates only from the year 1900, and the total length of the system in 1920 was not more than 370 miles. Seventeen mines and three smelters—that is to say, 71 per cent—of these enterprises were without railway or even of metalead-road communications. The region's output of rock salt and iron pyrites represented 100 per cent of the production of the whole of Transcaucasia and its production of copper 69 per cent. Before the war the copper output of the region represented 20 per cent of Russia's total production. Official

information collected by the mines administration concerning the total mineral resources of the country showed that the mines, wells, etc., in the region numbered 450. Of this total 60 mines contained lead and silver, 10 gold, 210 copper, 11 zinc, 3 molybdenum, 1 antimony, 6 cobalt, 16 manganese, 58 iron, 1 chromium, 8 arsenic, 23 iron pyrites, 9 sulphur, 8 graphite, 47 coal and lignite, 1 jet, 4 combustible schist, 9 peat, 1 ozocerit, 32 rock salt, 1 carbonate of soda, 1 Glauber salt, 3 borax, and 15 alum. There were also 6 oil wells and 6 salt springs.

The sources of revenue were state monopolies and indirect taxation. During the first five months of 1919, the revenue and expenditures balanced at 1,950,000 francs (ordinary budget) and the extraordinary expenditure was 4,650,000 francs. The army in 1919 was placed at a strength of 18,000 but in time of war it was said that this could be doubled.

The executive was in the hands of a cabinet of ministers (there being no president) as follows: Prime minister and minister of foreign affairs; and ministers of interior; public works; post and telegraphs; war; finance; commerce and industry; public education; and supplies and public charity. There was a chamber of eighty deputies (elected June, 1919, by universal suffrage) who also discharged certain executive functions. The prime minister in 1920 was M. Alexander Khatissian.

HISTORY.

ARMENIA AND THE TURKS. According to the leader of the Turkish Nationalist forces, Mustapha Kemal Pasha, the Armenians had maltreated the Mohammedans and the same complaint was made against the Government of Georgia. Accordingly on June 4th it was decided to send delegates to Moscow to protest against these acts. At the same time the Turkish forces were ordered to take the offensive against Armenia, in order to capture certain mountain passes, which controlled territory that had been guaranteed to Turkey by the treaties of Batum and Brest-Litovsk. At this time, however, confidential dispatches were received from the Soviet government saying that the frontiers of Persia, Armenia, and Turkey could be determined peacefully by the mediation of the Russian Soviet government, and therefore, that the Turks should not take the offensive. The Turks decided to proceed to the occupation of certain districts, including that of Kars, and ordered the eastern army to undertake the offensive as soon as possible. The campaign was interrupted by the arrival of a Russian agent through whom the Soviet government appealed for help in carrying out their own plans. The Soviet government then sent two divisions of the Russian army to the Caucasian front. These entered Azerbaijan where they were cordially welcomed and whence they began operations against Armenia and Georgia. Meanwhile the Bolsheviks were being defeated on the Polish front. Withdrawal of their troops from the east followed in order to reinforce the army engaged with Poland and a revolt was organized against the Bolsheviks in the East. Upon the withdrawal of the Soviet troops, the Armenians began operations and succeeded in capturing the coal fields of Olti. In August, the Armenians advanced to Julfa on the Persian frontier and the Turkish

forces retired to the south of the Arax River. Turkish attacks, however, were renewed in the autumn in conjunction with the Bolshevik forces, and before the close of the year the Turks had captured Erivan.

ARMENIA AND THE BOLSHEVISTS. In spite of a peace settlement that had been signed at Tiflis, August 10, the Soviet forces along with Tartar marauders were, according to the Armenians, ravaging the Armenian frontier provinces, and about September 15th, the Armenian government sent protests on the subject to the government at Moscow. It was said that fifty Armenian villages had been ravaged. The Bolsheviks renewed their attacks in October. Meanwhile, they had entered into the alliance with the Turkish Nationalists noted above. The Soviet government demanded of the Armenian Republic free transit for Soviet troops across its territory, and the use of its railways. The Armenian government at first rejected these demands. But the combined Turkish and Bolshevik movement continued with increasing force and the Armenian government was obliged to sign in November an armistice providing for the withdrawal of troops from the west bank of the Arpa River and for the occupation of Alexandropol by the Turks. Great distress was reported among the inhabitants, who had gathered in large numbers in the barren highlands where they were threatened with starvation. It was said on November 11, that 100,000 refugees were roaming about without shelter, food, or clothing, that the cities were overcrowded with them, that in short, the country was facing absolute destitution. After the occupation, the Armenian Republic was proclaimed as a Soviet state. Meanwhile, there were signs of jealousy between the Soviet government and the Turkish Nationalists, and on November 25, the Moscow government warned the Turks against advancing further into Armenia. Both parties made appeals to the Armenian population, the Turks saying that they would grant favorable terms and the Soviet government giving assurance of protection from attack. Meanwhile, the Powers represented at the League of Nations were struggling with the question of the Armenian mandate.

ARMENIA AND THE POWERS. In the Geneva Assembly, Lord Robert Cecil appeared to express the general sentiment of that body when he said that the League of Nations would not represent the public morality of the world if it was unable to do anything toward saving the Armenian people. A resolution offered by the French delegate, M. Viviani, after an eloquent address was carried, calling upon the Council to arrange with some Power for the taking of measures that would stop the hostilities between the Armenians and the followers of Kemal. On November 25, the Council transmitted this resolution to the governments of all the members of the League and made a special request for mediation on the part of the Government of the United States. On November 30, President Wilson replied that he would mediate through a representative. Meanwhile, according to the press, the Armenians were suffering at the hands of the Kurds and the Turkish Nationalists as much as ever. Moreover, the Bolsheviks were said to be gaining the upper hand in the Armenian Republic. It was evident that the Soviet propaganda among the Armenians was successful. On November 11,

the Armenian ministry which had taken part in the Treaty of Sevres had been replaced by an extremist government, which had come to an understanding with the Soviet government with a view to concluding a new armistice with the Turks. On the same date, Tchitcherin sent a message to Krassin, the Soviet delegate at London, announcing that the Russian Soviet had proposed to mediate between Turkey and Armenia. On November 19th, the Bolshevik commissary, M. Le Grand—and another delegate—set out for Evrian, and while they were on their way, a new armistice was concluded by the Turks and Armenians and the hostilities came to an end. The terms proposed by the Turks as published by the newspapers were ostensibly not aimed at the destruction of Armenia. The Turks on the contrary, desired to maintain Armenian independence in order that the country might serve as a buffer state between Turkey and Russia. The Turks demanded first of all that Armenia should renounce the Treaty of Sevres and that the frontier between Turkish and Armenian territory should be fixed by the two peoples concerned. Turkey desired that Armenia should abstain henceforth from making common cause with the Powers hostile to Turkey. The Turks demanded certain guarantees for the safety of the Moslems living in Armenian territory. This was the situation early in December when it was learned that President Wilson had chosen for his representative in the mediation, Mr. Morgenthau, former American ambassador to Turkey.

Interest centred at the close of the year in the question of boundaries. It had not been definitely settled at the close of the year, but it was understood that the limits proposed by the President included less of Turkish territory than those previously proposed by the Allied prime ministers. The boundary according to the first reports was to run along the Black Sea at a point a little to the west of Tireboli through Mitikan, west of Mush, south to Lake Van to the frontier of Azerbaijan. The President's award did not include the vilayets of Diarbekr, Sivas, Harput, and Adana. The line was not determined for the eastern frontier adjoining Georgia and Azerbaijan, which was to be left for the Allies to determine by separate negotiations. Owing to the operations of the Bolsheviks and the Turkish Nationalists, conditions were confused at the close of the year, and in view of the action of Greece and the probable necessity of revising the treaty of Sevres, the question of the boundaries of Armenia seemed likely to be re-opened in spite of the President's mediation. The Turkish Nationalists, who from the first had held control of Turkish Armenia, had overrun the Republic of Armenia and before the end of the year captured its chief cities, including the capital, Erivan. But the Russian Soviet government had obliged the Armenian Republic to submit to it. In fact Armenia was reported to be a virtual dependency of the Soviet government, which had already secured control over Azerbaijan, and was planning to do so over the Republic of Georgia. See WAR OF THE NATIONS.

ARMENIAN. See PHILOLOGY.

ARNOLD, LYNN JOHN. Lawyer and editor, died at Albany, N. Y., May 27. He was born at Burlington Flats, N. Y., September 28, 1864, and admitted to the New York bar in 1889. After a brief period of practice he was made

surrogate of Otsego County in 1895. He was a prominent member of various commercial and legal associations and was president of the *Knick-erbocker Press* at Albany.

ARTERIES, HARDENING OF. See RADIUM.

ARTERIOSCLEROSIS. See RADIUM.

ARTILLERY. See MILITARY PROGRESS; NAVAL PROGRESS, etc.

ASHTABULA, OHIO. See MUNICIPAL GOVERNMENT.

ASIA. See CHINA; JAPAN; EXPLORATION; and other subdivisions.

ASIA MINOR. See ANATOLIA and TURKEY.

ASPHALT. A preliminary estimate of the production and sales of asphalt and native bitumens and allied substances in the United States in 1919, issued by the United States Geological Survey, shows that asphalt produced from domestic petroleum amounted to 600,000 short tons, valued at \$9,000,000, an apparent increase over 1918 of 72,425 tons and of \$1,564,796, respectively. The asphalt produced from Mexican petroleum amounted to 672,000 short tons, valued at \$7,917,000, an increase from 1918 of 21,756 tons in quantity and a decrease of \$2,407,020 in value. About 115,000 short tons of native bitumens and allied substances valued at \$1,000,000 was produced in 1919, an apparent increase over 1918 of 54,966 tons and of \$219,192.

ASTRONOMY. The progress of astronomical research tends to centre about the work of the Mount Wilson Observatory, and here during the year 1920 were perfected instrumental methods of making celestial measurements far beyond the power of any apparatus hitherto available. The success of Michelson's interferometer attached to the 100-inch Hooker telescope, at Mount Wilson, was probably the most conspicuous event of the year. Other salient advances include the widespread use of radiotelegraphy in interchanging time-signals between observatories, for determining longitudes and for other purposes; increased knowledge of temporary stars and their meaning; and steady progress toward a sound knowledge of the structure of the stellar universe. There were no eclipses of special interest during the year; comets were uncommonly scarce; solar activity was not notable except for one brief outbreak; and the constant discussion of outstanding questions concerning the Einstein theory of relativity did not lead to any final results.

MOUNT WILSON OBSERVATORY. "The 100-inch Hooker telescope," says Director Hale in his annual report, "yielding results that are of service in all departments of the observatory's work, has remained a centre of interest throughout the year. In light-gathering power, in the photographic registration of minute details of structure, and in the separation and measurement, by Michelson's interference method, of double stars previously unresolved, this instrument has responded admirably to a wide variety of tests. Altogether the most significant of the auxiliaries thus developed is Michelson's interferometer, which promises to play an important part in the future of sidereal astronomy. Its possibilities in this field were clearly foreseen and fully described by Michelson in 1890, and one of them was successfully tested by him in his measurement of the satellites of Jupiter in the following year. The fact that no astronomical applications of the method have since been made is not easily explained. Astronomers acquainted

with the extreme sensitiveness of the interferometer, and constantly hampered by atmospheric disturbances, have naturally feared that differences in optical paths would obliterate the fringes. But it turns out that they can be clearly observed with large apertures, even when the seeing is poor.

"A crucial test was made September 18, 1919, when Professor Michelson, at the first trial on Altair, had no difficulty in seeing the fringes with the full aperture of the 60-inch and 100-inch telescopes. The essence of the method lies in the use of two slits, symmetrically placed on either side of the axis of the telescope, and so mounted in a rotating support that their distances apart can be varied. As the mirror is otherwise covered, the only light entering into the focal image is that which passes through the slits. Observed with a high-power eyepiece (2000 to 10,000 diameters), the fringes appear as sharp, narrow lines on a fluctuating background. In a case like that of the close double star Capella, the components of which, about 0."05 apart, are not visible in any telescope, there are two independent sets of fringes, one due to each star. On rotating the disk carrying the slits, the visibility of the fringes is seen to vary with the position angle. When the line joining the slits corresponds with the line joining the stars, the slits are separated until the fringes of one set fall exactly between those of the other, causing minimum visibility, or complete disappearance if the two stars are of equal brightness. The distance between the slits then permits the angular distance between the stars to be computed with a precision greatly superior to that attained by the micrometric measurement of wide binaries. As an indication of this precision, it may be mentioned that the greatest difference between the observed and calculated positions of the components of Capella is four-thousandths of a second of arc."

The apparatus above described has since been improved by using two adjustable plane mirrors instead of slits, in combination with the 100-inch telescope, a large interferometer being attached to the upper end of the telescope tube. The enormous resolving power thus attained, corresponding to that theoretically pertaining to a telescope of about 40 feet aperture (i.e., five times as great an aperture as that of the largest telescope in the world), made possible the remarkable feat which, announced at the Chicago meeting of the American Association for the Advancement of Science, Dec. 29, 1920, attracted immense interest throughout the world. This was the measurement of the angular diameter of a star. The method was applied to the star Betelgeuse (Alpha Orionis). As the distance of this star is known from parallax measurements, its actual diameter is easily computed from the angular diameter measured with the interferometer, and turns out to be enormous; viz., about 260,000,000 miles. Thus its volume is about 37,000,000 times as great as that of the sun, and if placed at the centre of the solar system it would extend nearly to Mars.

Michelson's method appears to be applicable not only to measuring close binaries and stellar diameters, but also to securing more accurate results than have hitherto been attainable in the measurement of wider double stars, determinations of parallax and proper motion, the measurement of the displacement of a star caused by the

gravitational field of Jupiter (Einstein effect), and probably other refined measurements. In short, it seems to open up a new chapter in the history of astronomy.

In addition to his applications of the interferometer, Michelson has been carrying out at Mount Wilson a new determination of the velocity of light, which promises to yield results of the highest accuracy.

The great light-gathering power of the Hooker telescope, used in the ordinary way, is indicated by Professor Hale's statement that it "should add several hundreds of million stars to those already known." One use to which it is to be applied is in the measurement of the radiation of faint stars and the determination of the spectral-energy curves of brighter ones. It is proposed to have Dr. C. G. Abbot make such measurements with the bolometer. At present measurements of stellar radiation are being made with a new device known as a "thalofide cell," in which the sensitive substance, fused on a quartz disk and mounted in an evacuated tube, is composed of thallium, oxygen and sulphur.

The continuation of Dr. Shapley's investigations of star-clusters has added further arguments in support of his view that the galactic system is much larger than was formerly supposed from consideration based on brighter stars. The use of an intensifying lens with the Hooker telescope has enabled him to photograph much fainter objects than could be reached formerly. He has also continued his studies of globular and open clusters, analyzed the characteristics of 1152 giant stars in 9 clusters, and determined the total intrinsic luminosities of 40 globular clusters, which he finds, on the average, to give 275,000 times as much light as the sun. Dr. Shapley's investigation of the faint globular cluster M 72 has revealed the presence of many variables, 26 of which have been studied, giving the light-curves and periods characteristic of Cepheids or the cluster type, and indicating that the distance of this very remote cluster is 83,000 light-years.

DISTRIBUTION OF THE STARS IN SPACE. The Dutch astronomers Kapetyn and Van Rhijn published a paper of exceptional interest which was put into popular language and otherwise elucidated by Prof. H. N. Russell in the *Scientific American* for October 30th. The following extract is from Russell: "Within a hundred light-years of our sun, the stars appear to be scattered with fair uniformity in space. The number which lie within this distance, according to Kapetyn's new calculation, is 6200. The great majority of stars in any given region of space are fainter than the sun, and really bright stars are rare. For example, out of the 6200 stars nearer than 100 light-years, 790, or only one-eighth of the whole number, may be expected to exceed the sun in brightness. About 100 of these will be ten times as bright as the sun, or more; and only five or six will exceed 100 times the sun's brightness. Only one star in 50,000, on the average, is 1000 times as bright as the sun. Stars fainter than the sun constitute the majority of the whole—5410 out of the 6200 stars aforesaid. About 3400 of these will give out less than one-tenth as much light as the sun, leaving some 2000 in the intermediate region of brightness; and of the 3400, 2200 will be found to possess a luminosity between 10 per cent and 1 per cent of the sun's. Among the remaining

1200 still fainter stars, only a dozen will be less than a ten-thousandth of the sun's brightness."

The Swedish astronomer C. V. L. Charlier, in an address delivered in Copenhagen in December, 1920, referred to some extremely important studies of the Galaxy being made at the Lund Observatory. He states that this work will demonstrate that the sun is situated at one end of the Galaxy instead of in the centre, as has been heretofore supposed, and that the Galaxy is an ellipse the major axis of which is directed toward the constellation Sagittarius.

TEMPORARY STARS. The study of temporary stars, or novæ, continues to occupy a very prominent place in astronomical research. The majority of these objects are faint and are discovered by photography, but it is notable that a bright naked-eye nova appeared in 1920, only about two years after the sensational appearance of the brilliant nova in Aquila. It was discovered by Denning, the well-known British student of meteors, on August 20, and is known as Nova Cygni No. 3. Of magnitude 3.5 at the time of discovery, it rose to a maximum brightness of 1.8 on August 24th, and then declined, remaining visible to the naked eye for less than a month. On photographic plates its history has been traced back only to August 16, 1920, when it was of magnitude 7. It is still visible in telescopes of moderate power, and the same is true of three other novæ; viz., Nova Aquilæ No. 3, Nova Lyræ, and Nova Ophiuchi No. 4.

Many hypotheses have been advanced from time to time to account for the visual and spectroscopic phenomena characteristic of temporary stars. According to Adams, the star is surrounded by a shell of incandescent gases, ejected at the time of the outbreak, and expanding in all directions. This hypothesis, based upon the shift of the spectrum lines, appears to have been strikingly confirmed in the case of Nova Aquilæ, of 1918, by the actual appearance in large telescopes of a small circular nebula in place of the star, which has steadily increased in angular diameter. In June, 1920, the diameter of this object, as measured at the Lick Observatory, was 3".8.

EINSTEIN THEORY. In accordance with Einstein's theory of relativity there should be a certain systematic displacement toward longer wave-lengths of the spectral lines radiated near the edge of the sun. According to a paper by L. Grebe and A. Bachem in *Zeitschrift für Physik*, vol. I, pp. 51-54, 1920, the authors claim to have found a shift agreeing satisfactorily with the theory for certain lines in the ultra-violet. There are, however, a great many possible sources of error in such measurements, and few astronomers admit that this problem has been solved. Efforts by J. Evershed and C. E. St. John to verify the Einstein displacement of solar lines are described in the *Observatory* for April, and the net result is merely to emphasize the great complexity of the problem. St. John and Babcock were still at work on this question at Mount Wilson.

THE SUN was comparatively quiescent during most of the year, but a group of spots that crossed the central solar meridian on March 21st was the largest since the great group of August, 1917. The passage of this group was attended, especially on March 22nd-23rd, by splendid auroral displays and great magnetic storms. Dur-

ing the summer of 1920 Ellerman, at Mount Wilson, took a large number of photographs of solar spectra for the purpose of studying the general magnetic field of the sun. These supplement the plates secured in 1916, which, according to measurements by Mr. van Maanen, confirm within narrow limits the period of 31.52 days found for the rotation of the sun's magnetic axis in 1914.

The Astrophysical Observatory of the Smithsonian Institution has established a new station for solar constant measurements in the Harqua Hala Mountains of Arizona, to replace the station on Mount Wilson. The station of the same institution hitherto maintained at Calama, Chile, has been removed to a much higher location, with better atmospheric conditions, 10 miles south of Calama. In his annual report for 1920, Director Abbot says: "From correspondence with Dr. Guthnick, of the Berlin-Babelsberg Observatory, a most interesting confirmation of the solar variability has appeared. Variations of brightness of the planet Saturn from January to May, 1920, were shown by Dr. Guthnick's photo-electric observations which could not be accounted for after allowance for all known sources of variability. These outstanding variations were found to be in almost exact correlation with fluctuations of the solar radiation as observed at Calama, Chile. One per cent increase in solar radiation was found to accompany 1 per cent increase in Saturn's brightness. These results, however, were only derived in connection with one of two possible interpretations of the nature of solar variation. The sun might vary in such a manner that its changes would be observed simultaneously in all directions and so would occur on identical days on all the planets. This hypothesis *does not fit* the available observations of the sun and Saturn. On the other hand, the solar radiation may be unequal in different directions. Such inequalities are, in fact, indicated by the ragged raylike structure of the solar corona. On this hypothesis a change of solar radiation would occur as ray after ray strikes the earth in the course of the sun's rotation upon its axis. These same unequally intense rays would reach the planet Saturn either before or after they reached the earth, according to the relative heliocentric longitudes of the earth and Saturn. The sun rotates about 14° a day, so that the angular difference in position of the two planets is to be divided by 14° to indicate the number of days allowance to be made between the dates of corresponding solar and Saturnian measurements. Proceeding on this second hypothesis, extraordinarily close correspondence between the variations of the sun and Saturn was found. Further work of the kind is to be done at Saturn's next opposition. It will be noted that this second hypothesis of the nature of the solar variation relieves us of the great difficulty of understanding how so immense a body as the sun could vary in radiation so rapidly as our observations indicate. We have now only to suppose that there are inequalities of radiation in different directions which may be due to the absorption or scattering of the rays in the coronal regions near the sun. These inequalities may persist with little alteration for weeks. We, however, note them as variations of solar radiation as they sweep by us in the course of the sun's rotation on its axis."

COMETS. In addition to the comets of 1919 mentioned in our last YEAR BOOK, one was dis-

covered by Skjellerup, at Cape Town, Dec. 18, 1919. It passed perihelion about Jan. 1, 1920. Tempel's second periodic comet, discovered in 1873, which has a period of about $5\frac{1}{4}$ years, was found by Kudara, at Kyoto, May 25, 1920. It was then of the 11th magnitude. The same comet was observed by Schaumasse, at Nice, July 18, and, owing to a mistake in the telegraphic announcement of Kudara's discovery, it was for a time supposed to be a different comet. A new comet was discovered by Skjellerup Dec. 13, 1920. At the end of the year it was of the 10th magnitude.

WIRELESS TIME SIGNALS. A large part of the May, 1920, number of the *Monthly Notices*, R.A.S., was devoted to articles on the exchange of wireless time signals by the great observatories of the world. Some of the objects to be attained by concerted work in this line are thus set forth by Professor Sampson: (1) A more exact knowledge of longitudes, implying the final settlement of the most obstinate of geodetical problems. (2) Consistency in time determinations throughout the world. (3) Elimination of small remaining errors in systematic right ascensions of stars. (4) Improvement in the knowledge of clocks as time-keepers and as chronographic instruments. (5) Some reaction to the benefit of radio research. Great progress has been made in apparatus for obtaining autographic registration at the observatories of time signals from remote high-power radio stations. Greenwich Observatory now regularly records the signals from Paris, Nauen, Lyons, and Annapolis, and occasionally those from Darien. An international programme for such work will probably be adopted at a meeting of the *Commission de l'Heure* in 1922. Wireless time signals are to be used in marking out the boundary between South and West Australia, defined by imperial act as the 129th degree of longitude east of Greenwich, and this will be the first step in a comprehensive scheme involving the redetermination of the whole longitude system of Australia. In May, 1920, M. Paul Ditisheim demonstrated a novel method of determining longitudes: viz., by carrying chronometers in an aeroplane. Several comparisons were thus made between the observatories of Greenwich and Paris.

MISCELLANEOUS. Although the Kiel *Centralstelle* for the exchange of astronomical telegrams has been officially supplanted by the agency which Entenist astronomers established at Uccle in 1919, Professor Kobold, in charge of the former institution before the war, has now made arrangements to distribute astronomical announcements by wireless from the Nauen station. The advantages of wireless for this purpose are so obvious that the same method is likely to be adopted by astronomers throughout the world. Prof. E. W. Brown's "Tables of the Motion of the Moon," which had been in preparation for 30 years, were published in three volumes in 1920 and will be used in computing the nautical almanacs of different countries, beginning with those for 1923. The new tables take account of nearly 1500 periodic terms of lunar motion. The Royal Astronomical Society, of Great Britain, celebrated its 100th birthday in 1920. An astronomical journal for the three Scandinavian countries, the *Nordisk Astronomisk Tidsskrift*, was started at Copenhagen at the beginning of the year. A fine observatory presented to the Case School of Applied Science, Cleveland, Ohio, by

the Warner & Swasey Company, of that city, was opened Oct. 12, 1920.

NECROLOGY. Among the eminent astronomers who passed away during the year 1920 were Sir Norman Lockyer, the astrophysicist and editor of *Nature*, August 16; Herman Struve, director of the Berlin-Babelsberg Observatory, August 12; Prof. Eric Doolittle, Flower professor of astronomy at the University of Pennsylvania, September 21; Prof. Arthur Searle, Phillips professor emeritus of astronomy at Harvard, October 23; J. A. Brashear, the great telescope-builder, of Pittsburgh, April 7; and Prof. Giovanni Celoria, director of the Osservatorio di Brera, Milan, August 17.

ATHLETICS, TRACK AND FIELD. The most important feature of the athletic season of 1920 was naturally the Olympic Games contested at Antwerp, Belgium, during the summer months but inasmuch as these games included practically every branch of sports as well as track and field events it seems wise to treat the entire subject under the caption **OLYMPIC GAMES**.

International strife on the track was not confined to the Olympics as in the spring of the year a team of runners representing Oxford and Cambridge universities, England, visited the United States and participated in the University of Pennsylvania relays. The athletes from overseas scored a signal triumph by capturing the 2-mile championship relay in the fastest time ever made in this event. The only consolation obtained by the United States collegians was in the defeat of E. A. Montague, England's star runner, by Gordon Nightingale of New Hampshire College in a special 3-mile race.

The next international clash came when Princeton University sent a team to England to compete in the British A. A. games. The invaders captured six of 10 events in a dual meet with Oxford. Cornell also entered into competition with the English colleges, sending a team of cross-country runners abroad to meet the pick of the Oxford and Cambridge long-distance men. The Ithacans, however, made a poor showing again demonstrating the weakness of the United States athletes in long-distance tests.

The athletic competitions in the United States resulted in many notable performances. Frank K. Foss of the Chicago A. A. surpassed all previous efforts in pole vaulting, reaching the height of his form at the Olympic Games where he vaulted 13 feet $5\frac{1}{4}$ inches. Charles Paddock, the University of California sprinter, equalled the world's record of $9\frac{3}{4}$ seconds for the 100-yard dash.

The senior Amateur Athletic Union championships, combined with the final Olympic try-outs were held at the Harvard Stadium on July 17th, the team honors going to the Chicago A. A. with 35 points. The New York A. C. finished second, one point behind the leader. Other clubs to score were: Illinois A. C., 15; Los Angeles A. C., 14; Olympic Club, San Francisco, 14; United States navy, 11; Loughlin Lyceum, Brooklyn, 7; Meadowbrook Club, Philadelphia, 7; Dubuque College, Iowa, 5; Multnomah A. C., Portland, Ore., 5; University of Washington, 5; University of Missouri, 4; University of Oregon, 3; United States army, 3; Boston A. A., 2; Yale University, 2; unattached, 2; 92d Street Y. M. H. A., New York City, 2; Washington State College, 1; St. Christopher Club, New York City, 1; Cornell College, Iowa, 1.

The individual winners in the senior outdoor meet were: 100-yard dash, Loren Murchison, New York A. C., 10 seconds; 220-yard dash, Charles Paddock, Los Angeles A. C., 21½ seconds; 440-yard run, F. J. Shea, United States navy, 49 seconds; 880-yard run, Earl Eby, Chicago A. A., 1 minute, 54½ seconds; 1-mile run, Joie Ray, Illinois A. C., 4 minutes 16½ seconds; 120-yard high hurdles, H. E. Barron, Meadowbrook Club, Philadelphia, 1½ seconds; 440-yard hurdles, F. F. Loomis, Chicago A. A., 55 seconds; running broad jump, Sol Butler, Dubuque College, 24 feet 8 inches; running high jump, John Murphy, Multnomah A. C., 6 feet 4½ inches; running hop, step, and jump, Sherman Landers, Chicago A. A., 48 feet 7½ inches; pole vault, F. K. Foss, Chicago A. A., and E. E. Meyers, Chicago A. A., tied at 13 feet 1 inch, Foss winning the jump off; putting 16-pound shot, P. J. McDonald, New York A. C., 47 feet ½ inch; throwing 16-pound hammer, Patrick Ryan, Loughlin Lyceum, 189 feet 4 inches; throwing 56-pound weight, P. J. McDonald, New York A. C., 37 feet 11¼ inches; throwing the discus, A. R. Pope, University of Washington, 146 feet 5 inches; throwing the javelin, M. S. Angier, Illinois A. C., 192 feet 10¾ inches.

The junior outdoor A. A. U. championships were also held at the Harvard Stadium, the team winner being the Boston A. A. with 32 points. The United States army men finished second with 23 points. Others to score were: Unattached, 18; New York A. C., 13; Pastime A. C., New York, 12; Paulist A. C., New York, 10; Mohawk A. C., New York, 8; Alpha P. C. C., New York, 7; Jersey Harriers, 5; University of Oregon, 5; 92d Street Y. M. H. A., 5; Hill School, 6; Texas A. and M. College, 5; University of Texas, 3; Massachusetts Institute of Technology, 3; Morningside A. C., New York, 3; Glencoe A. C., New York, 3; University of Idaho, 3; University of Kansas, 2; University of the South, 2; St. Stanislaus College, 2; Los Angeles A. C., 2; Enterprise Club, Philadelphia, 1; United States navy, 1; Syracuse University, 1; Dorchester Club, 1.

The 44th annual outdoor championships of the Intercollegiate Association of Amateur Athletes of America were held at Franklin Field, University of Pennsylvania, on May 28th and 29th. The point honors went to the University of Pennsylvania with a total score of 30½. Princeton finished second with 29 and Dartmouth third with 24. Other point winners were: Cornell, 20; California, 18½; Leland Stanford, 15; Harvard, 11; Penn State, 10; Massachusetts Institute of Technology, 7; Williams, 7; Yale, 5½; New York University, 5; Lafayette 3; Bowdoin, 2; Brown, 2; Rutgers, 2; Amherst, 1½; Pittsburgh, 1; Boston College, 1.

The individual victors were: 100-yard dash, Brown, Princeton, 10½ seconds; 220-yard dash, Brown, Princeton, 21½ seconds; 440-yard run, Hendrixon, California, 48¾ seconds; 880-yard run, Eby, Pennsylvania, 1 minute 58 seconds; 1-mile run, Shields, Penn State, 4 minutes 22¾ seconds; 2-mile run, Brown, Williams, 9 minutes 27¾ seconds; 120-yard high hurdles, Thomson, Dartmouth, 14¾ seconds; 220-yard hurdles, Wells, Leland Stanford, 23¾ seconds; shot put, Cann, New York University, 45 feet 10½ inches; hammer throw, Merchant, California, 150 feet 2¾ inches; broad jump, Landers, Pennsylvania, 23 feet 8 inches; high jump, Landon, Yale, 6

feet 4 inches; pole vault, Myers, Dartmouth, 12 feet 6 inches.

The 20th annual championship of the Western Conference colleges was held at Ann Arbor, Mich., June 4th and 5th. The University of Illinois carried off the laurels with a point total of 40. Michigan finished second with 30 and Wisconsin third with 25½. The Massachusetts Institute of Technology won the New England intercollegiate, scoring 33 points. Williams was second with 18, and Boston College third with 13¾.

In a dual meet contested at Queen's Club, London, Oxford defeated Cambridge by 5½ to 4½, first places only being considered.

ATKINSON, WILMER. Journalist, died at Philadelphia, Pa., May 10. He was founder of the *Farm Journal*. He was born at Warwick, Pa., June 30, 1840, and began, with H. M. Jenkins, the first daily paper in Delaware (1866). In 1877 he founded the *Farm Journal*, at Philadelphia, of which he remained the editor.

ATLANTA, GA. See CITY PLANNING.

ATOMIC STRUCTURE. See PHYSICS.

AUSTRALIA, COMMONWEALTH OF. A self-governing dominion of the British Empire comprising the island continent of Australia, with its dependencies. It consists of the six original states of New South Wales, Victoria, Queensland, South Australia, Western Australia, and Tasmania. The present government dates from Jan. 1, 1901, when the Act of Union was passed. It also comprises the two territories known as Western Territory and the Federal Territory. The former was transferred to the Commonwealth by South Australia and the latter by New South Wales, both on Jan. 1, 1911. The seat of government is provisionally at Melbourne, but eventually will be at Yass-Canberra, the site acquired in 1910 from the state of New South Wales.

AREA AND POPULATION. The following table giving the estimated area in square miles and the population according to the census of April 3, 1911, together with the estimates of June 30, 1919, is taken from the *Statesman's Year Book* (1920):

States and territories	Area, sq. miles	Census, April 3, 1911	Estimated June 30, 1919
New South Wales ..	309,432	1,646,734	1,962,989
Victoria	87,884	1,815,551	1,467,188
Queensland	670,500	605,813	712,827
South Australia	380,070	408,558	455,944
West Australia	975,920	282,114	323,220
Tasmania	26,215	191,211	210,881
Northern Territory ..	523,620	3,310	4,921
Federal Territory	940	1,714	2,573
Commonwealth	2,974,581	4,455,005	5,140,543

Since the year 1884 the population of Australia has about doubled. The country has always differed materially from older communities in its sex distribution. Whereas in the latter the number of males and females is approximately equal, with a small excess of females, in Australia, under normal conditions, males have always been in excess on account of the preponderance of males among immigrants. The economic development of Australia was of a nature especially to attract male rather than female immigrants, as it resulted from extensive mineral discoveries and the exploitation of the great natural resources, pastoral, agricultural, etc. In the census of 1911, after over 123

years of settlement, the males exceeded females in the proportion of 3.84 in every 100 of the population. The war changed this excess of males into a deficit. In 1916 there was an excess of females for every 100 of the population amounting to 1.50 per cent; in 1917, 1.97 per cent, and in 1918, 1.67 per cent. The age distribution has also been entirely different from that of older communities and this too, has been due to the importance of immigration in the growth of population, for the majority of immigrants are in the prime of life. In 1911, 64.8 per cent of the population were between the ages of fifteen and sixty-five. The aborigines have been rapidly decreasing. No precise figures can be given because no serious effort has been made under any of the censuses to determine the precise figure. Various estimates have been made from time to time and according to most of these the aborigines numbered about 150,000, but more recent estimates have given lower figures. In 1915, for example, the official known as the chief protector of the aborigines in Queensland, estimated the total at 61,705, a little more than one-half of these being in Western Australia, and the next largest number (15,000) in Queensland. The general tendency at present is to place the number under 100,000.

The estimated populations of the capital cities with their suburbs, Jan. 1, 1919, were as follows: Sydney, New South Wales, 792,700; Melbourne, Victoria, 723,500; Brisbane, Queensland, 181,199; Adelaide, South Australia, 235,751; Perth, Western Australia, 133,000; and Hobart, Tasmania (Jan. 1, 1918), 40,352.

Marriages, births, and deaths for 1918 as given by the *Statesman's Year Book* for 1920 were as follows:

States and territories	Marriages	Births	Deaths	Surplus of Births
States:				
New South Wales.	13,194	50,709	18,816	31,893
Victoria	9,156	31,597	15,177	16,420
Queensland	4,815	19,536	7,151	12,385
South Australia ..	3,190	11,357	4,890	6,467
Western Australia.	1,612	7,106	2,833	4,273
Tasmania	1,131	5,280	1,802	3,478
Territories:				
Northern Territory	39	105	74	31
Federal Capital Territory	4	49	6	43
Total	33,141	125,789	50,249	75,490

In 1918 there were 78,925 arrivals and 59,247 departures, thus showing a considerable increase of the former for the first time in some years owing to the fact that in previous statistics the return of the expeditionary forces was included.

RELIGION AND EDUCATION. The census of 1911 gave the number of those who were registered as Christians at 4,274,414. The chief denomination is the Church of England, whose members numbered, in 1911, 1,710,443. The other denominations in the order of their numerical importance were, in 1911: Roman Catholic, Presbyterian, Methodist, Baptist, Congregational, Lutheran, and Church of Christ. In the census of 1911, 36,785 were entered as non-Christians and about 140,000 were given as of no religion or unwilling to state their religious beliefs.

Primary education is free of charge and compulsory. In late years many improvements have been made in educational matters such as school administration, sanitation, lighting, building,

etc., and many reports have been made after comparative study of the school systems in other countries. In general, the kindergarten system has been more widely employed and has been a tendency to replace the older and more abstract methods by concrete methods. The education of children in sparsely settled districts has always been a difficult problem and attempts to solve it have been made by means of provisional schools, that is to say, schools formed of about a dozen pupils and later changed into the ordinary public schools when the attendance became sufficient; by half-time schools taught by visiting teachers; by instruction at the hands of intermittent teachers; by traveling schools, railway camp schools, etc.

In 1917 the state or public schools in the Commonwealth numbered 8992 with 24,177 teachers and 764,980 pupils; and the private schools numbered 1685 with 8028 teachers and 177,126 pupils. In 1918 New South Wales had 3424 government schools with 9022 teachers and 289,655 pupils enrolled; 698 private schools with 3806 teachers and 73,560 pupils. Victoria had 2373 state schools with 6455 teachers and 254,461 pupils; 493 registered schools with 2,010 teachers and 58,996 pupils. Queensland had 1571 elementary schools with 4134 teachers and 91,341 pupils in average attendance; private schools 160 with 887 teachers and an average attendance of 18,167 pupils. South Australia had 913 government schools with 73,502 pupils; 168 private schools with 13,369 pupils (1917). Western Australia had 667 government schools with 48,431 pupils; 127 private schools with 11,619 pupils. Tasmania had in 1917 486 public elementary schools with 36,350 pupils. There are in addition various high, technical and secondary schools in all the states; and each of the capital cities of the states is the seat of a university: Sydney (1918), students 2017; Melbourne (1918), 1448 students; Brisbane (1918), teaching staff 29, students 227; Adelaide (1913), students 720; Perth (1913), students 182; and Hobart (1917), students 93.

PRODUCTION. The following table taken from the *Statesman's Year Book* for 1920 shows the area of the crops and their yield in 1917 and 1918:

Year ended June 30	1917 Acres	1918 Acres
Area under cultivation	5,168,030	4,462,916
Principal crops	Area Acres	Produce Bushels
Wheat:		
Grain ..	3,806,604	86,598,000
		Tons
Hay	693,605	813,768
		495,180
Maize, grain	155,378	4,383,480
		145,754
Barley:		
Grain ..	5,195	73,870
		Tons
Hay	866	1,205
		844
Oats:		
Grain ..	67,111	1,084,980
		82,591
Hay	161,723	210,953
		118,917
Potatoes ..	22,449	45,331
		22,580
Lucerne (hay)	61,584	147,865
		Tons
Tobacco ..	952	921*
		791

* Crop failed.

In 1917-18 the total area under crops was 14,298,982 acres and the total value of the agricultural production was £57,967,307. The acreage of wheat for 1918-19 was valued at £7,991,026, with a yield of 75,146,172 bushels; oats (1917-18), at £580,000 with a yield of 9,850,000 bushels. The sugar crop for 1917-18 was placed at 327,589 tons and the estimated yield for 1918-19 at 208,000 tons. No statistics of manufactures were available later than for the year of 1917 when the number of establishments was 15,179 and of employees 321,670. The output of manufactures in the year of 1917 amounted to £69,807,000. See AGRICULTURE.

GRAZING. Australia is among the chief sheep raising countries of the world. Though the number of sheep has declined of late years, in 1918-19 the sheep numbered 87,925,982, of which nearly half were in New South Wales. At that time horses numbered 2,536,147; cattle, 12,658,762; and pigs, 1,045,810. Wool production in 1918-19 was 652,920,171 pounds. Wool production in 1917-18 was placed at 673,864,083 pounds and valued at £37,062,000 as compared with 547,702,295 pounds valued at £35,964,000 in the preceding year and 711,134,203 pounds in 1913-14. The exports of wool in 1917-18 were placed at about £311,239,307. See AGRICULTURE and DAIRYING.

MINING. Australia has been one of the chief producers of gold in the world and down to the end of 1918 it produced gold to the value of £594,536,723. The gold production reached its highest when it stood at £16,294,686, but after that time it steadily decreased. The leading states in gold production are: New South Wales, Victoria, and Western Australia. The total value of mineral production in Australia down to the end of 1918 was £957,862,623. The following table shows the value of the production of the principal minerals for each state and northern territory and for the commonwealth during the year 1918:

Minerals	N. S. W. £	Victoria £	Queensland £	S. Aust. £	W. Aust. £	Tasmania £	Nor. Ter.* £	O'wealth. £
Gold	369,743	674,655	567,371	26,252	8,723,183	44,724	2,229	5,408,157
Silver and lead	5,789,509	1,319	36,645	10,492	189,636	127,176	200	6,104,977
Copper	696,580	.....	2,087,751	828,556	66,146	776,106	9,648	4,464,787
Tin	548,876	24,481	251,755	.....	76,952	488,798	41,432	1,432,294
Coal	4,941,807	367,640	572,805	.....	204,319	37,676	.....	6,123,747
Other	1,644,649	84,547	225,098	574,849	5,341	276,094	39,221	2,799,299
Total	13,941,164	1,102,642	8,740,925	1,489,649	4,265,577	1,750,574	92,780	26,883,261

* Year ended 30th June.

MANUFACTURES. Statistics in respect to growth of manufactures are defective, but between 1901-17, the number of factories in the Commonwealth increased from 11,143 to 15,179 and the number of employees from 197,783 to 321,670. The largest number in 1917 were engaged in the clothing and textile industries; industries connected with food and drink; metal works, machinery, wood-working; and the making of vehicles and fittings for transport, saddlery, harness, etc. Female labor in factories is regulated in all the states by act of Parliament. In 1917 the average number of females in the manufacturing industries in the Commonwealth was 87,711 as compared with 233,959 males. The employment of children in factories is also regulated by act of Parliament. In general the term child denotes any one under sixteen years

of age. The minimum age is fourteen years in all the states with the exception of South Australia, where it is thirteen, and Victoria where for females it is fifteen. In 1917 the average number of children employed in factories amounted to 14,794.

During the past few years there has been an active development of the Australian woolen industry, although it was still estimated in 1920 that only about 3 per cent of the wool produced in the country was manufactured. In 1919-20, the various government cloth factories were considerably extended. The capital invested in woolen manufactures in 1920 was estimated at about £3,000,000 at pre-war prices, and employing about 6000 persons. A number of new industries sprang up during the war, including the manufacture of electrical materials, hardware, chemicals, paints, confectionery, chocolate, copra, sheep-dips and coal-tar products, and there was a considerable manufacture of agricultural and other implements. The rubber, iron, and steel factories were largely expanded. It was estimated in 1920 that about \$450,000,000 was invested in Australian manufactures, an increase of 40 per cent in ten years. A new tariff was in process of formation in 1920 to protect the industries that had arisen as a result of the war.

COMMERCE. There was a great decline in both imports and exports in the first year of the war, but there was a recovery to some extent in 1915-16. The total foreign trade of Australia for the fiscal year 1919 amounted to £201,243,293, which at the average conversion rate of \$4.50 to the pound sterling amounts to \$905,594,818. As compared with the previous year, this is an increase of £65,386,293, or \$294,238,318. The total imports from the United States for the calendar year 1919 amounted to £27,299,459, or, at \$4.50 to the pound sterling, a total of \$122,847,566. As illustrating the total foreign trade of Australia for the fiscal years 1918 and 1919,

and the pre-war year 1913, the following figures are given:

Years	Imports	Exports	Total
1913	\$358,870,500	\$353,574,000	\$712,444,500
1918	273,699,000	837,657,500	611,856,500
1919	426,806,254	479,288,565	905,594,818

The leading imports in 1917-18 and in 1918-19 were in thousands of pounds sterling as follows: Metal manufactures £7206 and £17,034; apparel £3302 (exclusive of hats, caps, boots, and shoes) and £8091; drugs, chemicals, and fertilizers £3358 and £4407; machines and machinery, £2095 and £3269; woollens £1895 and £904; oils in bulk £2686 and £3721; bags and sacks £2659 and £3934; paper £2107 and £4219; tea £1551 and £1956; timber £1427 and £2177;

spirits £1252 and £1174; tobacco £548 and £998. In 1918-19 the largest item of all was textiles with a value of £25,956. Tinned plates and sheets in 1918-19 amounted to 2134.

Leading exports in 1917-18 and 1918-19 in thousands of pounds sterling were: Wool, 24,587 and 42,767; wheat, 5990 and 11,335; copper, matte, ingots, bars, and ore 3115 and 2221; lead, pig and matte 3212 and 2891; skins and hides 21,856 and 4404; beef 3699 and 2473; flour 4420 and 5819; zinc and concentrates 351 and 430; leather 779 and 2197 (including manufactures); butter 4904 and 3193; mutton and lamb 453 and 1298; tin ingots 1065; tinned meat 2363 and 3798; tallow 909 and 2172. Other important items in 1918-19 were: Manufactures of metal, 1432; chemicals and fertilizers, 1216; and milk, 1097. Trade with the chief countries in 1917-18 was as follows:

From or to	Imports (1917-18) £	Exports (1917-18) £
United Kingdom	24,871,090	37,637,844
Canada	1,778,320	785,130
New Zealand	1,631,682	4,009,960
India	4,641,276	4,507,156
Ceylon	1,353,436	62,211
South African Union	187,398	1,092,430
Java	701,435	1,028,973
Belgium	1,346	.....
France	106,377	1,926,375
Germany	11,558	.....
U. S. of America	15,193,318	10,650,034
Japan	5,017,860	3,340,064
Russia	9	75,072
Italy	222,347	1,278,725

Australia's trade with the United States for the fiscal year 1919, according to the revised returns of the Commonwealth Bureau of Statistics, amounted to \$166,215,240, of which \$125,672,963 represents imports from the United States to Australia, and \$40,542,277 were exports from Australia to the United States. The trade of Australia with the United States for the fiscal years 1914, 1918, and 1919, was as follows:

Years	Imports	Exports	Total
1914	\$48,920,841	\$22,385,007	\$71,305,848
1918	\$9,542,348	\$7,824,758	\$17,367,106
1919	\$25,672,963	\$40,542,277	\$66,215,240

FINANCE. Commonwealth revenue and expenditures are given as follows for the fiscal years ending June 30:

	1916-17 £	1917-18 £	1918-19 £
Revenue:			
Customs	12,373,664	9,486,555	11,600,539
Excise	3,236,623	3,737,757	5,821,483
Land tax	2,121,952	2,123,779	2,108,689
Probate and succession duties	1,062,168	947,232	918,968
Income tax	5,621,950	7,885,514	10,376,832
Entertainments tax	110,683	245,899	357,907
War times profits tax	.....	680,008	1,206,647
Post, telegraph, and telephone	5,498,517	5,762,190	6,090,798
All other	3,936,877	5,958,413	5,442,063
Total revenue	33,962,434	36,327,347	43,921,926
Commonwealth Expenditure:			
From revenue	28,243,470	28,102,350	37,871,231
From loans	53,114,237	56,898,556	63,633,000
Total Commonwealth expenditure	81,357,707	85,000,906	101,504,231

Including:

	1916-17	1917-18	1918-19
Expenditure for war purposes	61,541,566	66,958,360	83,457,567
Old age pensions	3,453,344	3,858,990	3,879,240
Maternity allowances	662,080	634,428	620,080
Post, telegraph, and telephones	4,853,886	4,920,251	5,016,137
Payments to States:			
Out of revenue	6,270,419	6,340,374	6,454,333
Out of loans	7,263,180	2,881,385	8,042,767

For 1919-20 the estimated revenue was £46,346,635 and the estimated expenditures estimated at £49,570,203.

ARMY AND NAVY. The present military system is based on the defense acts of the Federal Parliament from 1903 to 1918, the main working principles being embodied in the acts of 1903 and 1904. These acts were amended by enormous subsequent enactments of which one of the most important was the act of 1909, providing for compulsory military and naval training with regulations for enrollment, exemption, etc. Under the defense acts of 1903 and 1904 every male inhabitant between the ages of 18 and 60 was liable to military service in time of war. To this the act of 1909 added the principle of universal liability to military training, being the first measure of this kind in an English-speaking community. Those liable to military training were divided into junior cadets, senior cadets, and citizen forces. Training for the junior cadets was prescribed between the ages of 12 and 18 and for senior cadets between the ages of 14 and 18. For the citizen forces, that is to say, men between the ages of 18 and 26, training was required for 166 days each year for two years and thereafter they were registered for six years. In November, 1916, an Australian army reserve was formed for the purpose of making use of the experience gained in the war. The enlistment was voluntary. The membership on April 30, 1919, was about 28,000. The total strength of the military force in 1918 was 122,186, nearly four times as great as in 1914. In 1920 a military defense scheme was under discussion. It provided for an organization on the basis of divisions which should be officered by citizen soldiers. It retained universal training (compulsory for 10 weeks in the first year of service), encouraged voluntary enlistments, and provided for an air force. It contemplated a force of 130,000. One of its features was a combined naval and military air board.

In 1920 the sea-going fleet consisted merely of six submarines, six destroyers, the light cruiser *Brisbane*, the training cruiser *Sydney*, and two sloops.

In 1909 the Commonwealth government decided to create an Australian naval force to replace the squadron maintained under an arrangement with the imperial government and the building of the fleet and the training of the crews were at once begun. Some small craft were ready in 1910 and in June, 1913, the battle cruiser, *Australia*, arrived in Australian waters. See **NAVAL PROGRESS.**

PENSIONS. After 1916 the rates under the old age and invalid pension acts were not to exceed £32 10s. a year and the pensioner's whole income was not to exceed £58 10s. a year. The qualifications were: Attainment of the age of 65 years and residence in Australian territory for 20 years for old age pensions and five years

for invalid pensions. Under the maternity act of Oct. 9, 1912, a bonus was paid up to a maximum of £5 for every child of white parents born in Australia. Disbursements for old age and invalid pensions in 1918-19 were £4,025,892. The maternity allowance for 1918-19 was £620,080. Old age pensioners in the commonwealth on June 30, 1919, numbered 95,969; invalids, 31,999; war pensioners, 181,529.

COMMUNICATIONS. The following table gives the statistics for federal, state, and private railways for the year 1917-18.

State or territory	Government lines— State Federal Miles Miles		Private lines available for general traffic Miles	Total open for general traffic Miles	Private lines used for special pur- poses only Miles	Grand total Miles
New South Wales	4,679.81	.....	185.02	4,864.33	160.83	5,025.16
Victoria	4,151.64	.....	24.94	4,176.58	46.12	4,222.70
Queensland	5,295.15	.....	555.77	5,788.92	918.48	6,769.40
South Australia	2,242.33	1,075.32	33.80	3,351.45	5.00	3,356.45
Western Australia	3,491.08	453.94	278.35	4,223.37	680.96	4,904.33
Tasmania	588.00	.....	162.86	750.86	30.85	781.71
Northern Territory .....	.....	199.56	.....	199.56	.....	199.56
Federal Territory .....	.....	4.94	.....	4.94	.....	4.94
Total	20,447.51	1,733.76	1,240.74	23,360.01	1,842.24	25,264.25

The long-discussed question of a single gauge for the railway lines of the Commonwealth advanced a step nearer solution as the result of a conference between the engineer-in-chief of the Australian Commonwealth railways and the engineering experts of the railways of the various states held during the year at which it was decided that the standard gauge of 4 feet 8½ inches was the most suitable for adoption.

As early as 1913 this action was considered and then the estimated cost of unification was £37,164,000, but since that date the track mileage had been considerably increased, and the cost of material nearly doubled, so that the cost of unification would be a very serious matter for the states other than New South Wales, which had standard gauge track. During the year a trial of the third rail system was made at Tocumwal with success and it was claimed that through trains could be run over the whole of Australia without disturbing any of the existing tracks. The estimated cost of a third rail installation was £3,500,000, and the time of completion was stated to be 18 months.

The number of post and receiving offices on June 30, 1918, was 8398. The total tonnage entered and cleared from 1913 to 1917-18 was as follows:

1913 ..	3,985	10,601,948
1914-15 ..	3,211	8,599,258
1915-16 ..	3,324	8,538,322
1916-17 ..	2,986	7,694,442
1917-18 ..	2,197	5,031,750

GOVERNMENT. The Commonwealth of Australia is a federal state forming a dominion of the British Empire and consisting of the six original states, the former colonies, as follows: New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania; also of the northern Territory transferred by South Australia to the Commonwealth, Jan. 1, 1911, and the Federal Territory transferred on the same date by New South Wales. Such legislative power as is not reserved to the states is vested in a Federal Parliament consisting of a Senate and a House of Representatives. The

Senate is made up of senators selected for six years, six from each state; and the House of Representatives consists of twice as many members as there are senators (as nearly as this is possible), the representation of states being in proportion to their population as shown by the latest statistics. The latest enumeration in 1920 being that of 1911, the representation was as follows: New South Wales, 27 members; Victoria, 21; Queensland, 5; and Tasmania, 5. The executive power is vested in the King, as represented by a Governor-General and in an

executive council of responsible ministers who must be members of Parliament. The Governor-General at the beginning of 1920 was Sir R. C. Munro-Ferguson. After the general election of December, 1919, a new ministry was formed to replace the Coalition Ministry which had come into power Feb. 17, 1917, and was reconstituted in March, 1918. Its members were as follows: Mr. W. M. Hughes, Prime Minister and Attorney-General; Sir Joseph Cook, Navy; W. A. Watt, Treasury; George Foster Pearce, Defense; E. D. Millen, Repatriation; L. E. Groom, Commerce and Railways; Alexander Poynton, Home and Territories; W. M. Greene, Customs; George H. Wise, Postmaster-General; E. J. Russell, Vice-President of the Council. The High Commissioner for Australia in London, in 1920, was Andrew Fisher, appointed Oct. 26, 1915.

HISTORY

PARLIAMENT. According to the final returns of the election of December, 1919 (noted in the preceding YEAR BOOK), the Nationalists had 39 seats in the Lower House, the Labor party, 26, and the so-called Country party, 10. The new Parliament met February 28th and proceeded to criticize sharply the Prime Minister, Mr. Hughes, for his use of the war power in an attempt to rid the country of strikers. His policy of prohibiting banks or any individuals from giving money or goods to strikers was unsuccessful.

On November 11th the House of Representatives at Melbourne expelled a Labor member, Mr. Mason, formerly Postmaster-General, on the charge of a disloyal speech on behalf of the late Mayor of Cork. The motion was made by the Prime Minister and the vote was 34 to 17.

NEW TARIFF. Three rates were provided by the new Australian tariff: First, the British preferential rate which applied to imports from the United Kingdom; the intermediate rate, to be granted after the conclusion of reciprocity agreements; and third, general rates applicable to all countries not entitled to either of the two preceding. The chief object of the tariff as defined by the Prime Minister was to protect the industries developed during the war, to en-

courage others that were desirable, and to diversify and extend existing industries.

PARLIAMENT. Toward the close of the year an Industrial Peace Bill was under consideration providing for central and district councils including an equal number of employers and employees for the settlement of industrial disputes, to supplement the Arbitration Court which was overcrowded with work. Its functions, which covered the whole industrial field, were advisory.

The immigration question was much discussed during the year. Plans were made to attract settlers and a bureau for that purpose was established in London. The Australian Parliament appropriated a considerable sum for the building of homes for workmen. At the close of the year consumers were protesting against the high retail prices and there was a demand for downward revision of the tariff. The War Precautions Act was continued until Jan. 1, 1922, and under that date it was required that foreign traders must first obtain permission from the Federal government.

"WHITE AUSTRALIA." The policy generally known as "White Australia" was set forth in 1920 in the speech of the Prime Minister, W. A. Hughes, in October. He compared it to the American Monroe Doctrine and to the British necessity of controlling the seas, placing it among the most vital of Australian policies and saying it was not a matter that could be submitted to the League of Nations. He declared that he did not believe there were 5 per cent of the Australians who were not heart and soul for this policy. The enemies of Australia must be kept outside of Australia. The first line of defense, according to Mr. Hughes, must be the navy and the air. A policy of liberal appropriations to the naval and air forces was essential.

THE HUGHES GOVERNMENT. In spite of its small majority in the Federal Parliament, the Hughes ministry continued throughout the year. No combination was formed against it on a decisive issue between the opposing parties, namely the Labor party and the Country party. The strength of the ministry in the course of the year was weakened somewhat by the retirement of Mr. Watt from the cabinet.

AUSTRIA. A republic, proclaimed, Nov. 12, 1918, and comprising territories within the limits laid down by the Treaty of Saint Germain, signed Sept. 10, 1919. The boundaries are given in detail below; they included roughly the territories corresponding to the former Austrian Provinces of Upper Austria, Lower Austria, Northern Tirol, Salzburg, Styria, Carinthia, and Vorarlberg, and they were later to include the German and Western portion of Hungary (q.v.). The area of the former Austrian Provinces was 39,012 square miles and the population according to the census of Dec. 31, 1910, was 7,529,935. A census of the new republic was taken on Jan. 31, 1920.

THE CENSUS OF 1920. The following account of the census of 1920 was supplied by the United States Bureau of Foreign and Domestic Commerce: Austria's territorial limits in 1920 had a population of 6,067,430. Compared with the corresponding figure for 1910 the census of 1920 showed a loss of 227,209, or 3.6 per cent. The city of Vienna alone, with a population of 1,842,005 in 1920, showed a loss of 189,493, or 9.3 per cent. Ten other cities, with a population of 20,000 or more each, gained 20,140, or 4.3 per

cent, while the smaller cities and the country districts showed a loss of 57,856, or 1.5 per cent. It was estimated unofficially that the number of Austrians killed in battle was 160,000 to 180,000 and the total loss due directly or indirectly to the war was 814,461. This figure was based on the calculation that if there had been no war and the population had increased in 1911-19 at the same rate as it had grown in 1901-1910 the population of Austria would have numbered 6,881,891 at the end of 1919. The population of the several Provinces and the principal cities as determined by the census of 1920 is shown in the following table:

Provinces	Population
Lower Austria	3,313,155
Styria	946,721
Upper Austria	857,284
Tirol	306,153
Carinthia (including the plebiscite district)	297,257
Salzburg	218,877
Vorarlberg	133,033
Total	6,067,430

Cities	Population
Vienna	1,842,005
Graz	157,632
Linz	93,478
Innsbruck	55,659
Salzburg	36,450
Wiener-Neustadt	35,023
Klagenfurt	26,111
St. Götten	23,061
Villach	21,896
Baden	21,095
Steyr	20,284
Total	2,332,639

These figures show a striking disproportion between the urban and the rural population. The 11 cities listed in the table contained 38.44 per cent of the republic's population, Vienna alone holding 30.36 per cent of the total. The war naturally increased the disproportion between the sexes. The census of 1920 showed 2,904,478 males and 3,162,952 females in Austria, or 1089 women for each 1000 men. The male population decreased 205,864 or 6.61 per cent as compared with 1910, while the number of females diminished by only 21,545 or less than 1 per cent. The male population suffered the largest losses in Vienna (121,868) in the Province of Vorarlberg, and in the city of Klagenfurt. In these districts the number of women also decreased, but in all other districts they showed an increase. The rate of increase was naturally smaller than the rate observed in the previous decade, owing to the fall in the general birth rate. The disproportion between the sexes was greatest in Vienna: 1163 women per 1000 men (in 1910 the ratio was 1086 to 1000). The smallest percentage of women was to be found in Carinthia, Tirol, and Styria—1050 women per 1000 men. In 1910 both Carinthia and Tirol had an excess of males.

EDUCATION. Elementary instruction is free and attendance compulsory as a general rule, between the ages of six and 14. In 1912 there were in the former division known as Austria, 23,247 elementary schools with 107,374 teachers and 4,471,393 pupils. In 1918 in the new republic there were 4763 elementary schools with 30,451 teachers and 913,999 pupils. Secondary education is provided in the gymnasia and the *realschulen* of which in 1917-18 the former numbered 73 with 20,955 pupils and the latter 38, with

14,632 pupils. In the former Austrian state there were eight universities. In the new republic there remained only four of these, namely, those of Vienna, Graz, Innsbruck, and Salzburg. They are all maintained by the state. Besides the universities, education was provided in technical schools, mining, high schools, and various schools for special purposes.

ECONOMIC CONDITIONS. It appeared in the summer of 1920 that Austria had raised a little more than a quarter of the food it needed for the fiscal year, and could probably support its 6,000,000 people till the middle of November or December, after which time its population must live on food obtained from other countries. The year 1913 was the last in which normal conditions prevailed in those regions which form the present Austria, and in that year the production of staples was as follows: 300,000 tons of wheat, 650,000 tons of rye, 235,000 tons of barley, 545,000 tons of oats, 404,000 tons of sugar beets, 1,716,000 tons of potatoes. Even in a good year such as 1913, the amount of grain for bread was only 11,850,000 tons. If from this amount 45 per cent is deducted for seed, bran, and other by-products, there would be only 652,000 tons of home-grown flour for a population of 6,500,000. It was estimated by the Austrian Foreign Office that even in a favorable year before the war Austria, as it now exists, would have needed to import 482,000 tons of grain for bread, 272,000 tons of potatoes, 360,000 cases of milk, 112,000 tons of sugar, 38,000 tons of legumes, 40,000 tons of rice, 33,000 tons of meat, 40,000 tons of lard, 12,000 tons of cheese, 1,800,000 tons of fish, and 859,000 tons of grain for cattle and industry. In 1920 these quantities, though needed, were not and could not be imported. Most of the people were dispensing with many things that were formerly regarded as necessities. The scarcity of food, however, was not due to neglect of agriculture. Austria had about 40 per cent of its employed population, or 1,276,000 persons, engaged in agriculture and forestry. The care with which the land is cultivated is reflected in the number of small farms in Austria. There are 819,564 landed properties—both private and public—most of them small holdings, under 5 hectares (12.35 acres) each. These include not less than 567,955 holdings under 5 hectares, aggregating an area of about 1,482,000 acres; 248,000 holdings from 5 to 200 hectares, aggregating an area of about 12,350,000 acres; 2123 holdings from 200 to 500 hectares, aggregating an area of about 1,600,000 acres; 1226 holdings over 500 hectares each, aggregating an area of a little over 7,410,000 acres. The public property covers a little more than 100,000 hectares, or 250,000 acres. See **AGRICULTURE**.

FINANCE. The 1919-20 budget was as follows: Revenue, 3,630,276,014 kronen; expenditures, 10,897,629,297. The following details are supplied by the *Statesman's Year Book* for 1920:

Revenue	Millions of kronen
Various revenues	1,286
Railways	990
Monopolies	892
Expenditure	Millions of kronen
Interest on debt	211
Interior	115
Army	555

Expenditure	Millions of kronen
Railways	1,183
Subventions for food	3,100
Liquidation of old debt	1,551
Civil pensions	98
Military pensions	31

ARMY. For statistics of Austria-Hungary before the war, see preceding issue of the *YEAR BOOK*. The defeat of the Central Powers naturally brought about the complete collapse of the military system and the terms of the Treaty strictly limited the military strength of the new Austrian republic. At the close of January, 1919, the government made an attempt to organize a limited military force by the creation of a Volkswehr or defense force, which in August, 1919, was estimated at a strength of 180,000 men. By the terms of the Treaty of St. Germain compulsory military service was abolished and the military forces were limited to a strength of 30,000 officers and men, which might be organized either in divisions or in mixed brigades. The details of the organization were not complete in 1920, but the following points were among those which had been determined: It was provided that all officers should be regulars; that newly appointed officers must serve for 20 consecutive years and that officers now serving must continue to serve to the age of 40. Enlistment of officers and privates was for not less than 12 consecutive years of which at least six were to be passed with the colors. By the terms of the Treaty all mobilization measures were forbidden; police officers, gendarmes, etc., were to be kept down to the number employed in those capacities in 1913; and members of clubs and educational establishments were not permitted to concern themselves with military matters. As to the air forces of Austria, they were to be demobilized within two months after the ratification of the Treaty, and the future army must not include military or naval air forces, all the material pertaining thereto being forfeit to the Allies. During the six months following the ratification of the Treaty, the manufacture of air craft or any parts thereof was forbidden. See **NAVAL PROGRESS**.

GOVERNMENT. The Austro-Hungarian Empire or the Dual Monarchy of Austria and Hungary was disrupted and redistributed in the course of events beginning in October, 1918, when portions of the former Empire began to split off and to declare their independence. Czechoslovakia proclaimed its independence, October 20. German Austria in its National Assembly declared its independence, October 21. The declaration of independence of the Austrian Ukraine followed, October 23; that of the Southern Slav States under the name of Jugo-Slavia, October 30, and that of Hungary, October 31. See **CZECHO-SLOVAKIA**; **HUNGARY**; **JUGO-SLAVIA**. When the Austrian Republic was proclaimed, Nov. 12, 1918, the government was in the hands of the National Assembly which appointed a provisional cabinet and arranged for the election of a National Constituent Assembly. This election was held Feb. 16, 1919, on the basis of universal suffrage and the new assembly was the only source of governmental power at the beginning of 1920. It was composed as follows: Social Democrats, 72; Christian Socialists, 69; German Nationalists, 26; other parties, 3. Un-

der the Constituent Assembly, March 15, 1919, a ministry was appointed which was holding office in 1920, as follows: State Chancellor and Minister of Foreign Affairs, Dr. Karl Renner (Social Democrat); Vice Chancellor, Jodok Fink (Christian Socialist); Minister of Commerce, Johann Zerdik (Non-Party); Minister of Social Insurance, Ferdinand Hanusch (Social Democrat); Minister for Military Affairs, Dr. Julius Deutsch (Social Democrat); Minister for Socialization, Dr. Wilhelm Ellenbogen (Social Democrat); Minister of Agriculture, Joseph Stöckler (Non-Party); Minister of Finance, Richard Reisch (Non-Party); Minister of Justice, Dr. Rudolf Ramek (Christian Socialist); Food Controller, Dr. Johann Löwenfeld-Russ (Non-Party); Minister of the Interior and of Education, Mathias Eldersch (Social Democrat); Minister of Railways, Dr. Ludwig Paul (Non-Party); and Minister of Constitutional Reform, Michael Mayr (Christian Socialist). For new ministry after the October elections, see below, under *History*.

On Feb. 15, 1920, the draft of a constitution was published, making Austria a Federal Republic in which Vienna was to be separated from Lower Austria and to form a constituent part of the new state. The draft proposed a double legislative authority consisting of the Federal Diet and the Council, the President of the Diet to be President of the confederation. The component parts of the state or "lands" were each to have its provisional Diet and were to continue under the forms of the former provincial legislative bodies. Under the constitution as adopted the Republic became a confederation of the following states: Lower Austria, which was subdivided into the province of Lower Austria and the city of Vienna; Upper Austria, Styria, Carinthia, Salzburg, Tirol, Vorarlberg, and Burgenland. The last-named was the portion of Western Hungary which had been awarded to Austria by the Peace Treaty. The executive power was in a president elected by the Federal Assembly. Legislative power was in the Federal Assembly which consisted of two chambers, namely: the National Council elected by direct proportional vote and the Federal Council elected by the Legislatures of each state. The Federal Council consisted of 46 representatives of whom 12 were from Vienna, 10 from the Province of Lower Austria, 6 each from Upper Austria and Styria, and 3 each from the other States, with the exception of Burgenland whose representation was not yet determined. The National Council consisted of 175 members.

HISTORY

GERMANY AND AUSTRIA. On April 22nd, Dr. Renner announced that after the ratification of the Treaty, Austria would ask permission to enter the League of Nations in order that she might then be re-united to Germany. On June 20th, President Seitz publicly expressed this view and it was approved by the greater part of the Austrian press, several of the most influential journals having already carried on an active campaign to this end. A German labor federation was organized in Vienna on behalf of German unity and on June 22nd a motion was offered in the Assembly for the union of Austria with Germany. The Assembly voted that the question should be submitted to the people in

the elections of October 17th and meanwhile it invited the government to take measures for effecting the union. The Assembly was unanimously for this action. The question whether such a union was in conformity with the Treaty of Versailles was much discussed and provoked especially sharp replies in the negative on the part of the French whose point of view may be illustrated by the following summary of the articles written by the former President of France, M. Raymond Poincaré, in October: It was admitted that Austria had been left in a critical condition by the Treaty—having a territory of only about 83 square kilometers and a population of little more than 6,000,000, of whom 2,000,000 were at the capital, Vienna. It was described politically as a state which had a very large head and a very small body. Within its limits there was little land for the raising of grain and its situation in respect to foodstuffs was deplorable. The public finance was in a chaotic condition, the value of the crown having fallen to eight centimes and the country being flooded with paper currency. Nevertheless, the Austrian section of the Committee on Reparations had shown much zeal in devising means for relief. Moreover there were other little states in Europe less populous than Austria which prospered and Austria was geographically in a good position for the development of commerce, being on the route from Germany and Czecho-Slovakia to the Mediterranean and to the Adriatic and on the route from western Europe to Asia Minor. She also possessed large mineral resources and forest wealth; and the water power, though as yet undeveloped, was fairly considerable. The Allies were ready to aid her in all possible ways including the development of her resources, the opening of food markets, the supply of coal, and the promotion of commerce with her neighbors. Austria, however, could not plead her financial condition, as Germany had done, as an excuse for release from the obligations of the Treaty. In its financial administration the government had shown itself inert. It had not, for example, reduced the number of its official servants which was excessive. It appeared to go on the same principle as the government at Berlin, that is to say, to fold its arms and let the conquerors take what action they might to get the money due them. On July 19th, the President of the Council had said Austria was waiting for the gentlemen of the Reparations Committee to aid her as they had promised. This attitude was followed by the vote of the Assembly above-mentioned which was plainly the result of Pan-German politics. The Allies had been negligent in this matter. They had not made it plain that Austria could not escape the obligations of the Treaty. They had not sufficiently warned her Slav neighbors in the newly made states of the danger involved in a united Germany and Austria and they had not held Germany to strict account in respect to article 88 of the Treaty of Saint-Germain which had condemned any such undertaking as the union of Germany and Austria. By articles 80 to 118 inclusive of the Treaty, Germany was required to respect the independence of Austria at the frontiers fixed by the Treaty and to recognize the permanence of this independence, except with the consent of the Council of the League of Nations. Now, according to article 5 of the Covenant, that consent must be unanimous, so the



refusal of France would prevent the union of Germany and Austria. Any infraction of the treaty entitled the Allies to occupy the right bank of the Rhine. Hence, from the moment that Austria should unite with Germany, the French would be authorized to hold the Rhine.

The Austrian National Assembly on October 1st asked the government to resort to a plebiscite on the question of the union of Austria with Germany. There were two main currents of political opinion on this subject: The Pan-Germanists favored union with Germany while another group recommended union with Bavaria with a view to forming a great Catholic state in the heart of Europe. Both these groups wished Austria to emerge from her isolation, but there were numerous elements that desired neither the one nor the other of these solutions. After the conclusion of the Treaty of Saint Germain, Austria, being reduced to a little state without great resources, was believed by many to be destined to attach herself to the territory of her great neighbor, but the question arose whether union with Bavaria might not be better. On September 12th, Dr. Renner in an address at Salzburg highly praised the Pan-German party, thus indicating that the existing Austrian government favored the German solution. The proposal of a plebiscite was in the interest of the Pan-Germans, for it was simply upon the question of the attachment of Austria to Germany that the people were to decide and union with Bavaria was not offered as an alternative. From the point of view of the Allies, and especially France, the union either with Germany or Bavaria was objectionable, since it would build up a strong Germanic power and it was argued that both these solutions would come to the same thing in the end. Reports in the press indicated that France while not intending to interfere for the purpose of preventing the plebiscite, did intend to take serious measures to prevent a union that was unfavorable to the principles of the Treaty. In Austria a union between the Socialist parties and the Christian Socialists had prevented the triumph of the disorderly or Spartacide element. This union, however, was a mere alliance and had no solid organization and in the coming elections the choice between the Socialists and the Christian Socialists was to come before the people. Now it appeared that even the Socialists favored attachment to Germany. This was explained by the belief of the Socialists that they would be more likely to realize their theories in a union with industrial Germany than if Austria remained a little isolated agricultural state, for the peasantry in general had no faith in Socialism. The Christian Socialists on the other hand believed that a union with Bavaria which after its Bolshevik experiment of 1919 had become a conservative state, veering, however, toward monarchy, would protect the country from radical Socialist policies. A third element of some importance in effect though not numerically was the monarchist group which worked for the restoration of the old system and desired a union with Germany under any form. An organ of this party displayed a map of the "Empire of Central Europe" and pointed out that this new empire would include North Germany under the Hohenzollerns, a Germany of the West and South under the Wittelsbach or Bavarian dynasty, and Austria consisting of the Southern and Eastern

provinces of the old monarchy, Hungary within its limits of 1914, the Kingdom of Poland within the limits corresponding roughly to those of the old Grand-Duchy of Warsaw, and a federated kingdom of Croatia, Slovenia, Trieste and its environs, with Bosnia and the Herzegovina; the whole to be under the sovereignty of the emperor of Austria who would possess sovereign rights also over an eastern federation including the Kingdom of Ukraine, along with the largest part of Galicia, a Kingdom of Rumania within its 1914 limits along with Bessarabia, and a Serbo-Bulgarian Kingdom. These dreams which attracted little attention in the English-speaking press were made much of by the French in accordance with the policy pursued steadily throughout the year of emphasizing the German peril.

On the first anniversary of the Treaty a demonstration took place in Vienna in favor of union with Germany and on that occasion a Vienna journal made the following remarks. "Yesterday's demonstrations must not be ignored by the parties who are directing the Entente. In signing the peace Dr. Renner expressed the general Austrian opinion when he said it was a grievous peace but a peace nevertheless. It was possible to entertain at that time certain illusions but the experience of the last 12 months had shattered them. No doubt now remains as to the impossibility of continuing to live under the terms of a treaty which has deprived Austria of her rights and cut her communications with the sea. The Austrian population will never consider the Treaty of Saint Germain as a political status governing all her future destiny."

POLITICAL DIFFICULTIES. On June 11th, the Ministry resigned in consequence of the opposition of the Left which accused the Christian Socialist government of violating its pledge in the matter of certain promised legislation, but the immediate occasion of the crisis was the firing of the gendarmes at Epatz on a crowd which was making a demonstration against profiteering in food. A number of persons were killed and it was alleged against the government that it tried to prevent an investigation and the punishment of the soldiers. There was difficulty also at this time as a result of the Bavarian movement in the Province of Salzburg, Tirol, and parts of Upper Austria, which had for its aim the setting up of a government kingdom along with Bavaria under the Bavarian Prince Rupprecht. In the summer uprisings on the parts of the monarchists were threatened and the country was further disturbed by demonstrations against the Jews. The draft of a new constitution was worked out in the course of the summer.

THE ELECTIONS. As a result of the elections on October 17th, the supporters of order and moderation represented especially by the Christian Socialists obtained a clear victory. The figures as published in the press in November were as follows: Christian Socialists, 82, as compared with 63 in the former chamber; Social Democrats, 66 as compared with 69; Pan-Germans, 20 as compared with 34; Peasants' League, 6; Bourgeois party, 1. Thus both Social Democrats and Pan-Germans lost a number of seats and in the case of the latter the defeat was more noteworthy in view of the vigor of their electoral campaign and their large fund for propaganda. As the above figures show, the Social Democrats fell from first to second place.

There was disagreement between the Christian Socialists and the Pan-Germans in respect to foreign policy, the former being hostile to the Pan-German programme for union with Germany; but an agreement was reached whereby the Christian Socialists were able to form a ministry of which the majority consisted of non-political experts. The Pan-Germans refused to take part in the government and reserved their freedom of action, saying they had consented to this compromise merely in order to insure a majority. The cabinet was constituted as follows: Federal Chancellor and Foreign Minister, Dr. Michael Mayr; Interior and Defense, Dr. Egon Glanz (expert); Education, Walter Breisky (expert); Finance, Dr. Ferdinand Grimm (expert); Food Supply, Dr. Alfred Grunberger (expert); Justice, Dr. Rudolf Paltauf (expert); Commerce, Eduard Heini; Agriculture, Alois Hauers; and Public Welfare, Dr. Joseph Resch.

On December 9th, Dr. Michael Hainisch was elected President by the National Assembly after three days of balloting, and as the result of a combination of Pan-Germans and Christian Socialists. The new President who was well known as a Socialist writer was elected a member of the Austrian Parliament in 1909. He was born in 1858, and was educated in the universities of Vienna, Leipzig and Berlin.

THE KLAGENFURT REGION. Under the treaty with Austria the people inhabiting the Klagenfurt region of Lower Austria were to decide by plebiscite whether to remain under Austrian rule or to join Jugo-Slavia. This district has an area of about 800 square miles and extends some 40 miles along the frontier between Austria and Jugo-Slavia, adjoining the Province of Carinthia. It contains the important manufacturing town of Klagenfurt. Formerly its population was almost wholly Slav, but in modern times the government colonized it with Germans and gradually the Slav population disappeared. The vote which was taken on October 10th gave 221,852 for Austria against 15,096 for Jugo-Slavia. The latter was discontented with the result and certain officers of the army declared that they would not recognize it. Their troops occupied some of the towns in the southern zone.

ECONOMIC DISTRESS. The efforts of the authorities to secure coal and other supplies continued throughout the winter of 1919-20. Unsuccessful efforts to obtain coal from the Czechs and to secure new loans in France were made in February by the Chancellor and his Minister of Finance. The arrival of 93 carloads of supplies in April afforded temporary relief. Prices continued to go up on account of depreciation of the currency and in April a quart of milk cost about \$3 in American money. A troublesome condition prevailed on account of the practice of adulteration, and in spite of severe penalties there were thousands of court cases pending in March for that offense.

At the end of 1920 the Austrian authorities declared that if provisions could not be promptly secured, public disorder would be likely to result. The scarcity was reported to be extreme. The country produced only a small part of its necessary foodstuffs and the government lacked the funds for purchases abroad. It was officially estimated that \$45,000,000 were required for the period, Sept. 1, 1920, to June 30, 1921, exclusive of the cereal products necessary for the industries (estimated at \$11,000,000). The

government had been obliged to centralize the trade in food, and carry it on under its direction. As a result, the Austrian budget for the ensuing year showed a large deficit, estimated at 20,000,000,000 crowns. As to the rate of exchange at the close of the year, the pound sterling, which before the war stood at 24 crowns stood at the end of December at 2000 crowns. Inasmuch as according to the estimates the indispensable purchase of foodstuffs to last until June, 1921, amounted to £32,500,000, Austria would have to send abroad 32,500,000,000 crowns, which would bring the budget deficit to about 20,000,000,000 crowns. Not only were the foodstuffs obtained at an exorbitant price, but they were becoming unobtainable at any price and the country was threatened with a condition that approached famine. Unless long-term credits could be afforded, the distress would become extremely acute. The press of the Allied countries generally favored coming to the assistance of Austria.

AUTHORS' LEAGUE OF AMERICA. This is an association of authors for mutual assistance in the many technicalities involved in publishing and copyrighting, and it supplies confidential information to members in regard to managers, producers, etc. The total membership of the League in 1920 was 1542. The Screen Writers' Guild had 150 members; the Dramatists' Guild had 110 members; and the Guild of Free Lance Artists had 165 members. The Authors' League Fund is a charitable organization to help needy authors, artists, dramatists, or composers. The annual meeting of the League is held on the second Tuesday of April of each year. The constitution of the League was amended at a special meeting held last spring in regard to membership, the amount of dues, and the formation of guilds. Only persons of recognized standing in the literary or artistic professions are eligible to membership in the League. The following were the officers for 1920: The League: President, Rex Beach; vice-president, Booth Tarkington; secretary-treasurer, Eric Schuler. The Dramatists' Guild: President, Owen Davis; secretary-treasurer, Jerome Kern. The Guild of Free Lance Artists: President, C. B. Falls; secretary-treasurer, F. G. Cooper. The Screen Writers' Guild: President, Thompson Buchanan; secretary, Jack Cunningham. Headquarters are maintained at 41 Union Square, West, New York City, and Louise M. Silcox is managing secretary.

AUTOMOBILES. The extraordinary growth of the manufacture and use of the motor vehicle in the United States continued during 1920. During the year, however, financial conditions made themselves felt in the industry and attempts were made to adjust it to new and threatening conditions attendant on the process of deflation and the abated prosperity in many lines. In some cases it was difficult to finance manufacture and in others there were readjustments of prices to meet changed conditions. Toward the end of the year certain plants shut down or arranged to curtail their output, while the tire industry was seriously affected, many manufacturers all but shutting down. See RUBBER INDUSTRY.

It must be remembered that few industries had developed more rapidly in the United States than those having to do with the manufacture and maintenance of automobile vehicles. In

1899 there were 3700 cars manufactured and put in service in the United States; in 1919 there were 1,974,016 manufactured and 117 imported and 82,730 exported. By the end of that year the total number manufactured had reached 9,453,686, the imports 9109, and those exported 426,504. Considering the cars in service by the number of registrations it would seem that in 1919 there were in use 7,558,848 cars, and that up to the end of that year there had gone to the scrap heap 1,677,443 cars; the contribution for 1919 being 489,172. In 1920, the *Scientific American* which compiled the foregoing figures from various authoritative sources, estimated the total manufactures for the year at 2,350,000, the imports at 200, exports at 100,000. The total number of cars manufactured to the end of 1920 was in excess of 12,000,000 of which over 500,000 had been exported. During 1920 there were in service according to registration statistics some 9,000,000 cars, practically 2,500,000 cars having been eliminated since 1900, with 809,048 as the estimate for 1920.

MOTOR TRUCKS IN THE UNITED STATES. Statistics based on reports of secretaries of state and estimates made by statisticians of one of the largest tire manufacturing companies, indicated that there were 953,093 motor trucks in operation in the United States at the end of 1919. The 1919 figures represented an increase of 37 per cent over the estimate of 700,000 trucks in operation at the end of 1918. No exact figures are possible inasmuch as only 18 States of the 48 keep separate registration lists for motor trucks.

The following is the estimate by States: Alabama, 10,249; Arizona, 3200; Arkansas, 5600; California, 58,700; Colorado, 13,500; Connecticut, 19,799; Delaware, 2100; Florida, 3239; Georgia, 9300; Idaho, 5600; Illinois, 65,000; Indiana, 36,000; Iowa, 42,500; Kansas, 27,800; Kentucky, 9105; Louisiana, 7100; Maine, 5792; Maryland, 10,160; Massachusetts, 42,000; Michigan, 36,863; Minnesota, 34,300; Mississippi, 6350; Missouri, 25,000; Montana, 1000; Nebraska, 27,300; Nevada, 700; New Hampshire, 3902; New Jersey, 20,000; New Mexico, 2810; New York, 94,716; North Carolina, 9150; North Dakota, 1314; Ohio, 64,500; Oklahoma, 20,100; Oregon, 11,300; Pennsylvania, 64,200; Rhode Island, 7000; South Carolina, 9600; South Dakota, 14,205; Tennessee, 12,000; Texas, 42,250; Utah, 5300; Vermont, 2402; Virginia, 11,800; Washington, 23,600; West Virginia, 6700; Wisconsin, 10,887; Wyoming, 2900.

Naturally the use of passenger vehicles in the United States in 1920 was practically universal but statistics compiled for the City of New York showed that 420,000 persons traveled back and forth to New York City daily by automobile. This figure did not include those using autos within the city borders. Motor trucks to the number of 7482 traveled on 15 ferries in 24 consecutive hours. Bridge traffic also was heavy, especially at certain hours, as many as 1344 vehicles having been counted in an hour. The number of cars and trucks entering and leaving the city daily was placed at 154,700. The average number of passengers per car is 2.7, while the average load per trucks was 1.14 tons. Of course what is true for New York holds good in proportion for practically every large city in the United States and the figures cited above may be considered as typical.

DESIGN OF PASSENGER CARS. During 1920

there were few startling or important changes in the design of passenger motor cars and in general so satisfactory were the leading types that the models brought out for the following year showed but very slight modifications. In fact in 1920 motor car design had reached a point where there was but slight difference in the body lines of the different makes, most of which conformed to fixed types, leaving to special and individual designs such departures as purchasers with unusual means required. For the open cars a low, rakish body was the approved practice, while the stock closed cars were reduced to a small number of standard types. However, automobile designers were not slow to read the signs of the time and to provide lighter cars and incorporate devices leading to economies of operation. In this connection there was also to be considered the increased cost and lower grades of fuel. This was true in the case of European designs and light cars were arousing increased interest across the Atlantic, even when there was no substantial saving in price.

Passing, however, beyond the general appearance of the cars and considering their power plants more diversity was to be noted. In 1920 the greatest number of cars probably were fitted with four-cylinder engines while the six-cylinder engine was used by the largest number of manufacturers. The eight-cylinder engine continued to show change and improvement, both in the V or twin four arrangement of cylinders, and in that where all eight cylinders were grouped in one line. The leading innovation in the V engine grouping was to set the two sets of cylinders at an angle of 60 degrees, as had been done with some success on a number of airplane motors, in place of the previous arrangement of 90 degrees. In the best designed engines little vibration was experienced notwithstanding that the intervening periods between explosions were not equal as when the cylinders were set at 90 degrees.

The long eight-cylinder all-in-a-line engine had been employed in racing cars and while it involved either small cylinders or a long power plant, nevertheless it was installed in a number of high-grade expensive European cars. By 1920 in practically all types of engine the detachable head was adopted as standard practice, so that with cylinders cast together in one unit access could be made to the interior of each cylinder without an elaborate taking down process. In 1920 low-grade and high-cost fuel resulted in various attempts to improve the vaporization of low-grade fuel. One instance was a device at the inlet manifold where a small amount of fuel was burnt so as to provide for the full vaporization of the remainder. This so-called "fuelizer" was found useful in starting an engine in cold weather and operated by igniting the fuel supply heating system through the agency of a spark plug when the starting switch is turned. In a number of cars heated intake manifolds are to be found, formed either by coring for fresh gas distribution passages surrounded by water, or even by the use of water-jacketed manifolds or those in proximity to the manifolds through which the hot products of combustion in the cylinders are expelled.

One innovation of the year was to provide brakes for all four wheels, small hydraulic cylinders energizing the brake bands to act against the brake drum. There is a central pressure

cylinder in the middle of the chassis from which oil leads of flexible tubing extend to the brake cylinders at each of the four wheels. Pressure with the foot on the brake pedal acts on the central cylinder and piston and the action was claimed to be positive, quick, and direct at each wheel. The device was derived from the familiar C-C or Constantinesco gear used to operate the machine-gun triggers of the airplane armament during the war.

AUTOMOBILE ACCIDENTS. The Bureau of the Census at Washington reported that each year the death rates from automobile accidents were higher than the rates of the previous year. Each year it becomes more and more dangerous for a person to walk the streets. The reason usually given, and probably the correct one, is that the number of automobiles in use is constantly increasing. How then shall this ever increasing danger be lessened? The obvious remedy is to

U. S. AUTOMOBILE FATALITIES
(Compiled by the Bureau of the Census)
DEATHS AND DEATH RATES FROM AUTOMOBILE ACCIDENTS

City	Number of deaths				Rate per 100,000 population				
	1919	1918	1917	1916	1919	1918	1917	1916	1915
Total	3,808	3,563	3,192	2,457	1,955	14.1	13.6	12.4	9.9
Akron	32	32	34	16	19	15.9	17.1	19.6	13.5
Albany	23	11	17	11	17	20.4	9.9	15.4	16.0
Atlanta	43	20	30	27	11	21.7	10.3	15.9	14.6
Baltimore	106	102	80	36	36	14.6	15.6	12.5	5.7
Birmingham	21	23	11	14	13	11.9	13.4	6.6	8.2
Boston	125	108	84	71	57	16.8	14.6	11.5	9.8
Bridgport	33	22	80	26	18	23.4	16.1	22.6	20.3
Buffalo	68	90	81	56	42	13.6	18.2	16.7	11.8
Cambridge	21	14	15	12	11	19.2	12.9	13.9	11.1
Camden	26	24	11	12	17	22.6	21.2	9.9	11.1
Chicago	328	291	310	243	212	12.3	11.1	12.1	9.7
Cincinnati	67	59	56	56	30	16.7	14.8	14.1	14.1
Cleveland	126	168	137	98	73	16.0	22.0	18.6	13.8
Columbus	40	38	30	26	16	17.1	16.6	13.4	12.0
Dallas	19	13	21	15	*	12.1	10.0	16.6	12.3
Dayton	16	22	19	8	7	10.5	14.9	13.2	5.7
Denver	41	43	23	21	13	16.1	17.2	9.4	8.7
Detroit	189	125	157	127	89	14.4	13.7	18.2	16.1
Fall River	9	14	12	6	9	7.5	11.6	10.0	5.0
Grand Rapids	16	9	14	9	11	11.7	6.7	10.6	7.1
Hartford	38	28	31	24	19	27.9	21.2	24.2	19.4
Houston	14	13	15	*	*	10.3	10.6	12.7	*
Indianapolis	26	27	31	19	15	8.4	8.9	10.5	6.7
Jersey City	40	30	22	19	19	13.5	10.2	7.6	6.6
Kansas City, Kan.	11	9	9	4	3	11.0	9.1	9.3	4.2
Kansas City, Mo.	42	64	56	38	29	15.1	20.5	18.4	12.8
Los Angeles	119	91	99	91	74	21.1	16.9	19.2	18.6
Louisville	19	28	22	9	17	18.1	12.0	9.4	3.9
Lowell	21	22	14	6	4	18.7	19.7	12.6	5.4
Memphis	26	19	23	†	12	17.4	12.9	15.8	†
Milwaukee	60	48	41	25	10	13.2	10.8	9.4	5.8
Minneapolis	38	43	43	33	26	10.1	11.7	11.9	9.4
Nashville	18	14	13	†	4	15.3	12.0	11.2	†
New Bedford	15	16	12	9	12	12.5	13.6	10.4	8.0
New Haven	24	28	22	23	12	14.9	17.7	14.2	15.1
New Orleans	36	28	44	20	17	9.4	7.4	11.7	5.4
New York	780	691	549	492	354	14.0	12.6	10.2	8.1
Bronx Borough	78	78	61	47	38	10.9	11.4	9.3	7.5
Brooklyn Borough	266	198	166	118	93	13.3	10.1	8.6	6.3
Manhattan Borough	368	363	272	228	197	16.1	15.8	11.8	9.9
Queens Borough	44	44	34	26	22	9.6	10.0	8.1	6.5
Richmond Borough	24	8	16	13	4	21.0	7.2	14.8	12.4
Newark, N. J.	82	62	62	53	30	20.0	15.4	15.6	13.6
Norfolk	24	13	4	8	4	21.1	11.8	3.8	7.8
Oakland	35	24	21	18	20	16.4	11.6	10.5	9.4
Omaha	28	26	23	14	9	14.8	14.0	12.6	8.0
Paterson	27	19	19	14	9	20.0	14.1	14.3	10.6
Philadelphia	191	226	169	153	91	10.6	12.7	9.6	8.9
Pittsburgh	94	105	100	64	51	16.1	18.1	17.4	11.3
Portland, Ore.	31	31	30	14	17	12.1	12.3	12.1	5.8
Providence	46	38	27	25	35	19.4	16.1	11.5	10.7
Reading	10	8	7	7	12	9.3	7.5	6.6	6.7
Richmond	10	9	10	10	11	5.9	5.4	6.1	6.2
Rochester	32	25	21	29	18	10.9	9.1	7.8	11.0
St. Louis	105	93	73	67	58	13.7	12.2	9.7	9.0
St. Paul	23	27	24	31	9	9.8	11.7	10.5	13.6
Salt Lake City	13	19	16	12	13	11.1	16.8	14.4	11.1
San Antonio	14	23	26	10	10	8.9	15.2	18.0	7.2
San Francisco	85	74	72	62	68	16.9	15.0	14.9	13.0
Scranton	20	16	14	16	10	14.6	11.7	10.3	11.9
Seattle	50	40	29	27	27	16.0	13.2	9.8	9.4
Spokane	12	10	8	5	15	11.5	9.6	7.7	4.8
Springfield	22	23	18	21	14	17.3	18.7	15.1	18.3
Syracuse	23	22	20	12	12	13.5	13.2	12.3	7.5
Toledo	34	32	26	19	15	14.2	13.8	11.5	8.7
Trenton	15	16	14	9	6	12.7	13.8	12.3	8.1
Washington, D. C.	58	54	46	37	18	13.4	12.8	11.2	9.3
Wilmington, Del.	18	18	22	14	9	16.8	17.1	21.4	13.9
Worcester	25	29	27	20	17	14.0	16.6	15.8	11.9
Yonkers	18	14	10	18	5	18.1	14.4	10.5	19.4
Youngstown	37	40	36	26	14	28.5	31.9	30.0	22.5

* Nonregistration.

† Transcripts not received.

improve constantly the traffic regulations to keep pace with the increasing number of automobiles.

This call for better and better traffic regulations is not a fanciful one and to be considered only for the largest cities. The well-known comparison was made with the necessity for slow and orderly progress when a crowd emerges from a circus tent and, similarly, automobile traffic must be slowed down and controlled until it becomes safe.

The 1919 rates for Kansas City, Mo., San Antonio, and Cleveland—all much lower than for 1918—furnish a ray of hope that American cities finally are appreciating the importance of the matter.

The following were a few suggestions for traffic improvement advanced by the Census Bureau:

1. At street crossings the erection of curbed safety islands, which, at the most dangerous spots should be very close together.

2. Construction of additional crossings in the middle of blocks, where automobiles can approach from only two directions.

3. Demonstration of great skill in driving each machine before granting a driver's license for that machine.

4. Reduction of the speed limit, especially at crossings.

5. Fine, revoking of license, and imprisonment, each to have its place as an actual penalty.

The tendency of some writers to exonerate automobile drivers and to place the blame of accidents upon pedestrians was also referred to as indicating a lack of a full comprehension of the problems involved.

The preaching of more caution to careless and aged people and children will never be sufficient. They must be protected by additional safeguards, and city governments which will continue to make their traffic regulations more and more rigid till they can point to low death rates from automobile accidents will deserve the commendation of all thoughtful people.

BRITISH MOTOR VEHICLE TAXES. The new automobile and motor truck taxes which had been under discussion in Great Britain and which substitute a horse power and weight basis of taxation for the gasoline tax were adopted to become effective Jan. 1, 1921.

All motor-spirit duties were done away with and the revenue was to be raised solely by vehicle taxes. Motor cycles were given an arbitrary rating; passenger cars were to be assessed £1 per unit of horse power; motor buses on seating capacity, ranging from £15 for five-seated vehicles to £84 for those seating more than 32, while motor trucks, tractors, and road locomotives would be assessed as follows:

<i>Motor Trucks</i>	
Not exceeding 12 cwt. unladen weight	£10
Exceeding 12 cwt. but not exceeding 1 ton unladen weight	16
Exceeding 1 ton, but not exceeding 2 tons unladen weight	21
Exceeding 2 tons, but not exceeding 3 tons unladen weight	25
Exceeding 3 tons, but not exceeding 4 tons unladen weight	28
Over 4 tons unladen weight	30
Any of the foregoing with the right to draw trailer	(additional) 2

Notes:

(1) In ascertaining the unladen weight of electrically propelled vehicles, the weight of the accumulators is to be excluded.

(2) Quarterly licenses to be permitted on payment of 20 per cent above one-fourth of the annual duty.

Other Commercial and Agricultural Vehicles

*Motor tractors (classed as heavy motor cars).... £21

*†Road locomotives and agricultural engines:

Not exceeding 8 tons unladen weight..... 25

Exceeding 8 tons, but not exceeding 12 tons unladen weight..... 28

Exceeding 12 tons unladen weight..... 30

*†Agricultural tractors used on roads for haulage solely in connection with agriculture;

Exceeding 2½ tons, but not exceeding 5 tons unladen weight..... 6

Exceeding 5 tons..... 10

A "tractor" means a mechanically or electrically propelled engine which draws but does not itself carry any load except such as is necessary for its propulsion and equipment.

Quarterly licenses to be permitted on payment of 20 per cent, above one-fourth, of the annual duty except in respect of vehicles only liable to duty at 5s.

* Inclusive of the legally permitted trailers.

† Locomotive plowing engines, agricultural tractors not exceeding 5 tons unladen weight, or other agricultural engines drawing necessary gear, threshing appliances, farming implements or supplies of fuel or water, shall pay a duty of 5s. per annum only, if not used on roads for other haulage work.

The taxes here enumerated were considered very drastic even in Great Britain but were required by the road upkeep and for other considerations. In the case of the taxes on motor trucks it was believed that the increased costs could be passed along to the shipper or consumer. A committee in charge of recommending the law studied in detail the effect of the new taxes on privately owned passenger cars. While the new taxes were heavy it was shown that if both the former vehicle and gasoline taxes were considered practically, all cars which are run 10,000 miles or more per annum would carry a lower tax under the new scale. If run only 5000 miles per annum, the 22 horse power car would be taxed about \$30 a year more than before. The 35 horse power car would pay \$65 a year more, while the 60 horse power car would pay \$120 per year more. For runs of only 2500 miles per year the excess of the proposed over the former taxes would be very much greater, amounting for the 35 horse power car to about \$90 per annum.

MOTOR CAR PRODUCTION IN 1920. The year 1920 marked a record in the production of motor vehicles and the figures given below, compiled by the National Automobile Chamber of Commerce, show the total number of passenger cars and trucks made by American manufacturers in 1920 and 1919, the product of the latter year exceeding by 265,000 the number turned out in 1919. See CITY PLANNING.

Cars and trucks produced in 1920	2,241,000
Total production in 1919	1,974,016
Passenger cars produced in 1920	1,906,000
Production in 1919	1,657,662
Motor trucks produced in 1920	335,000
Production in 1919	316,364
Wholesale value of cars and trucks produced	\$2,136,183,676
Wholesale value of passenger cars produced	\$1,703,437,213
Wholesale value of motor trucks produced	\$432,746,463
Average wholesale price of passenger cars produced	\$897
Average wholesale price of motor trucks produced	\$1,273
Motor truck manufacturers in production	170
Passenger car manufacturers in production	90
States in which factories are located	32
Employees engaged in car and truck manufacture	300,000
Automobile tires manufactured	32,400,000
Increase in gasoline production over 1919	19%

RACING EVENTS. Few new racing records were established during 1920. The driver to attain the most fame was Gaston Chevrolet who won the 500-mile event on the Indianapolis Speedway in May. His time was 5 hours, 38 minutes, 32 seconds. Chevrolet (q.v.) lost his life in an automobile race held late in the summer. The winners of the principal racing fixtures of the year were: Los Angeles, 250 miles, J. Murphy; Indianapolis, 500 miles, Gaston Chevrolet; Uniontown, 225 miles, Tommy Milton; Tacoma, 223 miles, Tommy Milton; Elgin, 251 miles, Ralph de Palma; Fresno, 200 miles, J. Murphy.

AVERY, SAMUEL P. See PAINTING AND SCULPTURE.

AVIATION. See AERONAUTICS.

AZERBAIJAN. A territory of Trans-Caucasia which as constituted in 1920 consisted mainly of the former Russian provinces of Baku and Yelisavetpol; with the Caspian Sea on the east, Georgia, on the north, Caucasus and Daghestan on the north, Georgia and Armenia on the west and Persia on the south; with an area given at about 40,000 square miles, but with claims for additional territory which would bring the area to about 58,000 square miles. The population was roughly estimated on the basis of Russian statistics at 4,615,000, of which 3,482,000 were Moslems and 795,000 Armenians, the racial stock of the majority being Turks and Tartars. Capital, Baku, the centre of the petroleum industry, with a population of about 250,000. Besides petroleum, which is the main industry, there are resources of cotton, silk, wine, and cereals. Cattle-raising and fishing are among the other industries. Railways traverse the country from Baku to the west and north and lines are under construction to the south-west. In 1919 the revenue was given at 665,000,000 rubles and balanced the estimated expenditure. Along with Georgia and Armenia it formed a federation of republics in October, 1917, but this was dissolved and Azerbaijan declared its independence May 28, 1918. A government of 12 Ministers was created by the Constituent Assembly which was then formed and a Parliament of 120 members was subsequently elected. The new government recognized its responsibility for a portion of the Russian debt. Its status as a *de facto* government was recognized by Great Britain in January, 1920. Although at its beginning it opposed the Bolsheviks, the majority were later won over to the Bolshevik cause and in April, 1920, the so-called Unionist party defeated their opponents known as the Equality party and formed a government which was said to be completely dominated by the Soviet government of Russia. There were many reports of persecutions on the part of the Bolshevik authorities and of the direct interference of Soviet representatives in the affairs of the state. In the autumn a Russian extraordinary committee was said to be proceeding with great severity against the opponents of the government. The former representatives at the Peace Conference, who were now in the opposition, sent a protest to the American ambassador in Paris early in September against the inference in the letter of the American Secretary of State to the Italian ambassador that the principle of self-determination did not justify the independence of Azerbaijan. A Communist congress was held at Baku, September 3, under the Soviet official, M. Zinoviev,

which passed resolutions against the Entente Powers. It was the scene of many spectacular demonstrations against the Allies, including the burning of President Wilson and the French Prime Minister in effigy. The Prime Minister at this time was Dr. Narimanov, who also held the portfolio of foreign affairs.

BABTIE, Sir WILLIAM. British army surgeon, with the rank of surgeon-general, died in Belgium, September 11. He was born May 7, 1859, and educated at the University of Glasgow, entering the army medical service in 1881. He served in Crete 1897-98 and in South Africa during the Boer War, where he was present at a number of important actions and won the Victoria Cross for gallantry in attending the wounded under fire at Colenso. He was director of the medical service in India in 1914-15, and in the report on Mesopotamia he was sharply criticized but it was afterwards held that the charges were not of a nature to preclude his further service and he was appointed medical inspector at the War Office.

BACON, ALEXANDER SAMUEL. Lawyer, died at Brooklyn, N. Y., May 29. He was born at Jackson, Mich., Nov. 20, 1853, and graduated at West Point. Having been admitted to the bar in 1879, he practiced law in this country and abroad during many years, and at the same time wrote and lectured extensively. Among his writings were the *Woolly Horse*; *The Illegal Trial of Christ*; *Masonic Nobility*; *Mohammed and Islam*; and *Ancient Cplendars*.

BACON, KATHERINE. See MUSIC, Artists, Instrumentalists.

BADEN. Former grand duchy of the German Empire; after November, 1918, a Republic in the new German state; bounded by Bavaria on the east and the Palatinate and Alsace-Lorraine on the west; with an area of 5819 square miles and a population, in 1910, of 2,142,833, estimated in 1914 at 2,229,100; capital, Karlsruhe (population in 1910, 134,411); largest city, Mannheim (206,049). Instruction is compulsory and free, the elementary schools being supported by the communes or the state. No later statistics were available than those given in the preceding YEAR BOOK for 1912-13, when there were 6075 teachers and 351,008 pupils. The secondary educational institutions include 17 gymnasia, 50 real schools, 12 high schools for girls, 12 training colleges for teachers, one commercial high school and many technical and special schools. There are two universities, one at Heidelberg and one at Freiburg and there is an Academy of Arts at Karlsruhe. It was estimated that 56 per cent of the total area was under cultivation and 39 per cent was forest. The crops included wheat, barley, rye, potatoes, wine, tobacco, etc. The chief mineral products are salt and building stone. In 1918, there were 26,414 acres under vines which yielded 7,887,000 gallons of wine. The chief manufactures are tiles, jewelry, cigars, machinery, clocks, musical instruments, chemicals, cotton tissues, silk ribbons, hats, paper and cardboard, leather, woodwork, brushes, etc.

The revenue and expenditure for 1919 was reported at £13,937,308 and £13,839,898 respectively. In the former grand duchy, the executive power was vested in the Grand Duke and the legislative in the Landtag or Representative Assembly, consisting of two houses. The Grand Duke abdicated Nov. 22, 1918, and Baden was

proclaimed a Republic under a provisional government. On Jan. 15, 1919 a National Assembly began work on the new Constitution, having been elected on the basis of equal, secret, direct, and universal suffrage for all persons over the age of 20. The Constitution was proclaimed March 21, 1919. It abolished all privileges of birth, religion, and caste; bestowed on women the same rights as men and made them eligible for public office; gave the right of forming unions to all employees including civil servants; bestowed suffrage on all persons, male or female, over 21 years of age; and adopted the initiative and referendum as well as proportional representation. The executive was vested in a cabinet of seven Ministers and six State Counselors or Ministers without portfolio and legislative power in a Landtag consisting of a single chamber which has the right to nominate the President of the cabinet. The cabinet as reconstituted in April was as follows: State President and Minister of Military Affairs, Anton Geiss (Socialist); Minister of Foreign Affairs, H. Dietrich (Democrat); Minister of Social affairs and Public Works, L. Rückert (Socialist); Minister of the Interior, A. Remmele (Socialist); Minister of Finance, Dr. P. Köbler (Centre); Minister of Justice, G. Trunk (Centre); and Minister of Education, H. Hummel (Democrat).

BAHAMAS. A group of West Indian islands, 29 in number, together with 661 small islets and over 3000 reefs, off the southeast coast of Florida constituting the northern part of the British West Indian colonies. They are of coral formation and about 20 of them are inhabited. Area, 4404 square miles; population, estimated, Jan. 1, 1918, at 59,928, of whom from 75 to 90 per cent were colored. The principal islands as to population in 1911 were as follows: New Providence (13,554), containing the capital, Nassau; Andros (7545); Eleuthera (6533); Abaco (4463); Exuma (3465); Long Island (4150); Grand Bahama (1824); St. Salvador (5072); Acklins Island (1733); Crooked Island (1541); Harbor Island (1031); Great Inagua (1343); Watling's Island (617); Mayaguana (358). In 1918 there were 50 government schools with 7360 pupils and 12 aided schools with 822 pupils. There were 23 Church of England schools with 1089 pupils, and a small number of private schools. The following information was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: "The people, many of whom are illiterate, live under primitive conditions. There are no manufacturing industries. The principal field product is sisal, the chief marine product, sponges. Early tomato growing for the American winter market is an infant industry, promising, but not yet organized as to grading, packing, or transport. Subtropical and citrus fruits, coconuts, and avocado pears are grown in limited quantities and locally consumed. No wheat and little corn are produced and nearly all food, with the exception of fresh beef and mutton, is imported from the United States. There is said to be a revival of the salt-gathering industry at Inagua Island, and there is a promise of experiment with sea-island cotton on New Providence. There is some cutting of pine timber on Abaco Island for the Cuban market, and a small cannery for pine-apples on the island of New Providence." The chief imports in 1918 were cotton, linen, and woolen goods, sugar, hominy, rice, lard, butter,

etc., and tobacco, oil, and meat. The chief exports were sisal, sponges, salt, etc. The imports in 1919 were \$2,630,455 as compared with \$1,834,973 in the preceding year, and the exports in 1919 were \$1,864,096 and \$1,356,915 in 1918. Over four-fifths of the trade has been with the United States. The revenue in 1918 was £81,049; the expenditures, £98,237.

BAILEY, CLARENCE MITCHELL. Brigadier-General, died May 21. He was born in New York City, Nov. 26, 1841, and after the outbreak of the Civil War was second-lieutenant in the Sixth United States infantry. He was made captain in 1866 and colonel during the Spanish-American War. He retired for disability in the line of duty, May 5, 1899, and was advanced to the rank of brigadier-general and retired April 23, 1904.

BAKER, HORACE. Railroad official, died April 13. He was born in Missouri and after holding subordinate positions from 1878 to 1885, was made treasurer and paymaster of the Havana, Rantoul and Eastern Railway. In 1902-04 he was assistant general superintendent of the eastern district of the Southern Railway and from 1906 to 1917 he was general manager of the Cincinnati, New Orleans, and Texas Pacific Railway, and the Alabama Great Southern Railway. After Jan. 17, 1917, he was general manager of the Southern Railway system.

BAKER, JAMES. British traveler and author, died June 24. He was born Jan. 1, 1847, and in his youth made extensive voyages including Greece, Russia, Lapland, Egypt, and other countries, and made a special study of Bohemia. He became correspondent for the *Pall Mall Gazette* and other papers and lectured extensively on foreign countries and other subjects. He continued to travel and give lectures for many years and during the war lectured throughout the country on Bohemia and Rumania. Among his various writings may be mentioned: *Pictures from Bohemia* (1894); *The Gleaming Dawn* (1896); *The Cardinal's Page* (1898); *The Unsurpassed* (1905); *Austria* (1912); *Bohemia and Her People* (1917).

BAKER, JOHN GILBERT. British botanist, died August 16. He was born Jan. 13, 1834; became an assistant in the Kew Gardens, Kensington, in 1866, and passed the greater part of his life in that work. He wrote *North Yorkshire; Flora of the English Lake District*; and *Handbook on Fern Allies*, etc.

BALKAN STATES. The states which make up the Balkan peninsula in southeastern Europe and west of the Aegean Sea. See ALBANIA, BULGARIA, GREECE, MONTENEGRO, RUMANIA, SERBIA, TURKEY, etc., and also the article, WAR OF THE NATIONS.

BALLOONS. See AERONAUTICS.

BALTIC PROVINCES. The three former provinces of the Russian Empire in the region of the Baltic Sea, namely, Courland, Livonia, and Esthonia. During the war they were cut off from Russian authority and were under German control. In the autumn of 1919, an Allied commission appointed by the Peace Conference went first to Berlin and then to Riga to arrange for the withdrawal of German troops from the Baltic provinces. By the end of December, 1919, the evacuation was complete. After the war Courland and the southern part of Livonia were included in the new republic of Latvia (q.v.), and the northern part of Livonia was included

in the new republic of Esthonia (q.v.). In 1920 the new states had been recognized by some of the Powers, but France and the United States were withholding recognition on the ground that they formed an integral part of the territory that should belong to a properly constituted Russian state. See titles of the three former provinces and also WAR OF THE NATIONS.

BALTIMORE COUNTY, MD. See MUNICIPAL GOVERNMENT.

BALTIMORE, MD. See GARBAGE.

BANK CLEARINGS. See FINANCIAL REVIEW.

BANKHEAD, JOHN HOLLIS. Senator, died, March 1. He was born at Moscow, Ala., Sept. 13, 1842, and served with the Federal forces in the Civil War, during which he was wounded three times. In 1865-67 he was a member of the Alabama House of Representatives and from 1887 to 1907 he was a member of Congress. In July, 1907, he was selected senator to succeed Senator Morgan for the term expiring 1913 and he was reelected for the two succeeding terms. He was a prominent member of the committees on public buildings, and rivers and harbors, and the author of the law giving Federal aid to post roads.

BANKS AND BANKING. See FINANCIAL REVIEW.

BAPTISTS. Reports for 1920 for this denomination show in the United States a membership of 7,504,447 as against 7,236,650 shown in the 1919 reports. There were 53,866 churches, 42,121 ordained ministers, and 219,465 baptisms (during the year). The Baptists are divided into three main branches, the Northern Convention, the Southern Convention, and the National Convention (colored). Statistics for the beginning of 1920 show in the Northern branch: 9101 churches, 8346 ordained ministers, 1,285,416 members, 8203 Sunday Schools, with 101,809 officers and teachers, and 951,450 pupils. Statistics for the Southern Convention show: 24,373 churches, 17,308 ordained ministers, 3,023,674 members, 18,894 Sunday Schools, with 127,908 officers and teachers, and 1,698,898 pupils. Statistics for the negro conventions show: 20,151 churches, 17,398 ordained ministers, 2,735,007 members, 16,500 Sunday Schools, with 78,008 officers and teachers, and 822,618 pupils. In the three conferences of Canada there were: 1350 churches, 853 ordained ministers, and 141,800 members. There are a number of foreign-speaking Baptist bodies, including the German, Swedish, Danish, French, Italian, Finnish, Hungarian, Norwegian, Czecho-Slovak, Polish, Rumanian, Portuguese, Russian, and a number of others, each represented by its own general conference. There are several other branches of the Baptists, among which the larger are (statistics of 1919, the latest available): Primitive Baptists, with 2282 organizations, 87,359 members, and 19,423 ministers; the Free Will (colored) with 172 organizations, 14,183 members, and 294 ministers; Free Will, 750 organizations, 54,812 members, 873 ministers; General Baptists, with 518 organizations, 33,427 members, and 589 ministers; and Regular Baptists, with 383 organizations, 20,046 members, and 494 ministers. All these organizations carry on extensive missionary work, so that Baptist missions are found in all parts of the world. This work is conducted by separate boards for the various branches. The denomination maintains

14 theological seminaries and has under its control 101 colleges and universities.

World figures, based upon the British *Baptist Handbook* for 1920, show that in North America there are in this denomination, 55,986 churches, 43,272 ordained ministers, and 7,702,196 members; South America, 832 churches, 212 ordained ministers, and 22,676 members; Europe, 5216 churches, 3588 ordained ministers, and 618,538 members; Asia, 2405 churches, 1747 ordained ministers, and 244,731 members; Africa, 532 churches, 560 ordained ministers, and 24,535 members; and Australasia, 376 churches, 295 ordained ministers, and 31,138 members, or grand totals for the world of 65,347 churches, 49,674 ordained ministers, and 8,643,814 members.

BAPTISTS, FREE. This denomination has ceased to exist as a denomination, having completed its union with the Baptist Church in 1919. All missionary work was taken over by the Northern Baptists.

BAR ASSOCIATION, AMERICAN. An organization having for its purpose the advancement of the science of jurisprudence, the promotion of the administration of justice and uniformity of legislation, and the upholding of the honor of the legal profession. The forty-third annual meeting was held in St. Louis, Mo., Aug. 25, 26, 27, 1920, with President Hampton L. Carson presiding. The meeting opened with an address of welcome by Walter G. Goodson, Acting Governor of Missouri, followed by an address by the President of the Association. After this address he introduced Sir Auckland Geddes, British ambassador to the United States. Mr. Carson spoke on "The Evolution of Representative Constitutional Government," tracing the development of the principles contained in the Constitution, and showing its firm foundation. Sir Auckland Geddes spoke on the problem of the adjustment of man to his environment. A memorial tribute to George Whitelock, the late secretary of the Association, was read. A long discussion, led by Thomas C. McClellan, was held on the subject of expanding the Association. It was brought out that at present there are some 12,000 members, out of 127,000 lawyers in the United States. An address on "The Future of International Law" was given by Viscount Cave, Lord Justice of Appeal for the Dominion of Canada. The reports from the various sections and committees followed. The sixth session of the meeting consisted of a discussion of the general subject of Legal Aid. The following speeches were made: "The Relation Between Legal Aid Work and the Administration of Justice," by R. H. Smith of Massachusetts; "Legal Aid Societies, Their Function and Necessity," by Charles Evans Hughes, of New York; "The Relation of Legal Aid to the Municipality," by E. L. Tustin; and "Justice without Cost for Parent and Child," by Ben B. Lindsey, of Colorado. The Secretary's report showed 11,243 active and 14 honorary members at the date of publication of the 1920 report. Since then there have been 277 deaths and resignations, and 778 new members and 1 honorary member were proposed, all of whom were elected by the executive committee. The Association is affiliated with 38 State Bar Associations. The report of the treasurer showed \$18,773.24 in assets. *The American Bar Association Journal* is the official organ of the organization. The minutes of the annual meeting are published in book form. The officers in

1920 were: President, Hampton L. Carson, Philadelphia, Pa.; secretary, W. Thomas Kemp, Baltimore, Md.; and treasurer, Frederick E. Wadhams, Albany, N. Y. Headquarters are maintained at 901 Maryland Trust Building, Baltimore, Md.

BARBADOS. An island colony of Great Britain, the most westerly of the Caribbean islands, lying to the west of the Windward Islands, with a length of 21 miles and a breadth of 14 miles. Area, 166 square miles; population (1911), 171,982; estimated Dec. 31, 1918, 191,664. Capital and chief city, Bridgetown, with a population (1911) of 16,648. Figures for revenue, expenditure, exports, and imports in pounds sterling are as follows:

1918-1919	
Revenue	347,497
Expenditure	357,817
Imports	2,986,996
Exports	2,480,646

The public debt in 1918-19 was £530,000. The executive power is in a governor with an executive council and executive committee; and the legislative power in a legislative council of nine members and a house of assembly of 24 members elected by the people each year. The Governor, at the beginning of 1920, was Lieut.-Col. C. R. M. O'Brien.

BARBER, OHIO COLUMBUS. Capitalist, died at Akron, Ohio, February 4th; known as "Match" Barber. He was born at Middlebury, Ohio, April 20, 1841, and went to work in his father's match factory, 1856, becoming the head of the firm after his father's death. He consolidated the leading companies into the Diamond Match Company, of which he became the president. He founded in 1891 the town of Barbertown, Ohio, and devoted himself to its development.

BARGE CANAL. See CANAL.

BARLEY. Estimates published by the International Institute of Agriculture, Rome, showed for most European countries some recovery in barley culture in 1920, as compared with 1919. The largest increases in acreage and production over the preceding year were reported for Rumania, Belgium, the United Kingdom, France, Germany, Bulgaria, the Netherlands, Spain, and Greece. For a group of countries of the northern hemisphere representing about 46 per cent of the world's yield, the production for 1920 was placed at 564,777,675 bushels, or 7.2 per cent above the production in 1919 but still 6.1 per cent below their average yield.

The chief barley-producing countries in the northern hemisphere and their yields in 1920, exclusive of the United States, were as follows: Japan 92,022,500 bushels, Germany 88,000,000 bushels, Spain 85,594,500 bushels, Canada 62,946,000 bushels, and England and Wales 50,688,000 bushels. For Russia, which produced about 500,000,000 bushels annually before the war, no data were available. The consumption of barley in normal times is largest in Russia, Germany, the United States, the United Kingdom, and Japan, given in the decreasing order. Barley is preëminently a crop of the northern hemisphere, both production and consumption in the countries south of the equator being comparatively small.

According to estimates by the Department of Agriculture the United States in 1920 produced

202,024,000 bushels on 8,083,000 acres, or at the rate of 25 bushels per acre. These figures represent an increase of 885,000 acres in area and of 40,697,000 bushels in production, and a decrease of 1.1 bushels in the average acre yield. The average price of barley on the farm Dec. 1, 1920, was only 70.7 cents per bushel as against 121 cents Dec. 1, 1919. The increase in acreage and production was not sufficient to offset the decline in price, so that the total value of the crop on this basis was only \$142,931,000 or \$52,368,000 less than the year before.

The principal barley producing States in 1919 were California, South Dakota, Minnesota, Kansas, and North Dakota, which furnished more than half of the country's crop. In California the variety known as Mariout is proving of value by reason of its greater drought resistance and yielding capacity, and its lesser tendency to shatter as compared with the common varieties. As pointed out by the California Agricultural Experiment Station, the heavy losses through shattering due to the use of the combined harvester in harvesting the barley crop can be avoided largely by cutting with the self-binder.

BARNARD COLLEGE. See COLUMBIA UNIVERSITY.

BAROTSELAND. See RHODESIA.

BARRAGE. See DAMS.

BARTHOLOMEW, JOHN GEORGE. British geographer and map-maker, died April 16th. He was born at Edinburgh, Scotland, March 22, 1860, and was educated at Edinburgh University. He was prominent in the important geographical societies and one of the founders of the Royal Scottish Geographical Society, of which he was secretary for many years. Among the various atlases that he issued may be mentioned the *Survey Atlas of Scotland* (1895-1912); *Citizen's Atlas* (1898-1912); and *Atlas of Meteorology* (1899), and atlases of England and Wales, the World's Commerce, Imperial India, Zoography, etc. He was head of the Edinburgh Geographical Institute.

BARTLETT, HOMER NEWTON. American composer and organist, died in Hoboken, N. J., April 3. He was born in Olive, N. Y., Dec. 28, 1845. At the age of 10 he appeared in public as a pianist, but continued his studies until 1861 under S. B. Mills (piano) and O. F. Jacobsen (organ and comp.). Then he filled several positions as organist in New York, the last at the Madison Avenue Baptist Church, where he remained almost 35 years. He was one of the founders of the American Guild of Organists, and served several terms as president of the National Association of Organists and vice-president of the New York Manuscript Society. His compositions number almost 250, the more important being a three-act opera, *La Vallière*; an oratorio, *Samuel*; a symphonic poem, *Apollo*; a cantata, *The Last Chieftain*; a sextet for strings and flute; a violin-concerto in G; a dramatic aria for tenor and orchestra, *Khamzin*; also numerous works for organ and piano.

BASEBALL. The professional baseball season of 1920 in the United States was the most remarkable in the history of the national game. Never before did the various clubs make so much money and never before did so many sensational events in connection with the sport occur. In fact despite the financial success that marked the year baseball almost went "on the rocks" as the result of the scandal that developed

regarding the playing of the world series of 1919 between the Chicago White Sox and the Cincinnati Reds.

As a result of confessions made by certain members of the White Sox team that they had accepted bribes from a gambling combine to "throw" the world series the Chicago grand jury indicted eight of the White Sox and President Comiskey of the Chicago club promptly expelled the accused players from his team. This expulsion took place a few weeks before the close of the season and so crippled the White Sox that they lost what chance they had of winning the American League pennant for the second year in succession.

The players indicted were: Gandil, first baseman; Weaver, third baseman; Jackson, outfielder; Cicotte and Williams, pitchers; Risberg, shortstop; McMullin, substitute infielder; and Felsch, outfielder.

So critical was the situation of organized baseball that the internal troubles of the American League resulting from the opposition on the part of three club-owners to the continued iron-clad rule of Ban Johnson, president of the league, were eventually smoothed over and the American League united with the National League in offering the post of supreme arbiter of the game to Kenesaw Mountain Landis, a Federal judge of Chicago.

Judge Landis finally agreed to accept the position providing he were given complete authority to purge the game in any way he saw fit from the gambling scandals that threatened to wreck the sport and also have the final say in all disputes which might arise from time to time among the owners or players of the two big leagues. The minor leagues joined in the agreement which gave Judge Landis the powers he sought with the result that for the first time in the history of organized baseball a disinterested person has taken the reins.

Another remarkable feature of the year having to do with the playing end of the game was the marvelous batting done by George "Babe" Ruth of the New York American League team. Ruth piled up the enormous total of fifty-four home runs for the season, a figure never before approached.

If baseball of 1920 had its fill of squabbles bearing upon the politics of the game and its many thrills afforded in the playing of Ruth, Sisler of the St. Louis Browns, and others, it also had its tragedy in the death of Ray Chapman, the Cleveland shortstop, who was hit on the head by a pitched ball at the Polo Grounds. This unfortunate accident occurred late in the season just when the Cleveland team was battling for the lead and it seemed to spell the doom of Cleveland's pennant chances.

Under the inspiring leadership of Tris Speaker, however, his men rallied in time to bring the first championship to the Forest City. In addition Cleveland won the world championship by its defeat of the Brooklyn Club, National League pennant winner, Speaker's men capturing five of the seven games played.

The attendance and receipts of the world series of 1920 showed a big falling off from the previous year, a fact that could be partially attributed to the disclosure of the scandal of the 1919 series and partially to the restricted seating capacities of the Brooklyn National League grounds and the Cleveland grounds. The total attendance for

the seven games was 174,349 and the receipts were \$564,800.

The first game of the series was played at Brooklyn, October 5th, Cleveland winning by a score of 3 to 1. The Cleveland battery comprised Coveleskie and O'Neill, while Brooklyn used Marquard, Mamaux and Cadore in the box with Krueger behind the bat. The statistics regarding the other games follow:

October 6th at Brooklyn—Brooklyn 3 runs, 7 hits, 0 errors; Cleveland 0 runs, 7 hits, 1 error. Batteries Grimes and Miller; Bagby, Uhle and O'Neill.

October 7th at Brooklyn—Brooklyn 2 runs, 6 hits, 1 error; Cleveland 1 run, 3 hits, 1 error. Batteries Smith and Miller; Uhle, Caldwell, Mails and O'Neill, Nunamaker.

October 9th at Cleveland—Cleveland 5 runs, 12 hits, 2 errors; Brooklyn 1 run, 3 hits, 1 error. Batteries Coveleskie and O'Neill; Cadore, Mamaux, Marquard and Miller.

October 10th at Cleveland—Cleveland 8 runs, 12 hits, 2 errors; Brooklyn 1 run, 13 hits, 1 error. Batteries Bagby and O'Neill, Thomas; Grimes, Mitchell and Miller, Krueger.

October 11th at Cleveland—Cleveland 1 run, 7 hits, 3 errors; Brooklyn 0 runs, 3 hits, 0 errors. Batteries Mails and O'Neill; Smith and Miller.

October 12th at Cleveland—Cleveland 3 runs, 7 hits, 3 errors; Brooklyn 0 runs, 5 hits, 1 error.

The final standing of the clubs in the American League was: Cleveland won 98, lost 56; Chicago won 96, lost 58; New York won 95, lost 59; St. Louis won 76, lost 77; Boston won 72, lost 81; Washington won 68, lost 84; Detroit won 61, lost 93; Philadelphia won 48, lost 106.

The final standing of the clubs in the National League was: Brooklyn won 93, lost 61; New York won 86, lost 68; Cincinnati won 82, lost 71; Pittsburgh won 79, lost 75; Chicago won 75, lost 79; St. Louis won 75, lost 79; Boston won 62, lost 90; Philadelphia won 62, lost 91.

The pennant winners in the more important minor leagues were:

International, Baltimore; American Association, St. Paul; Southern Association, Little Rock; Pacific Coast, Vernon; Eastern League, New Haven; Western League, Tulsa; Texas League, Fort Worth.

Among the American colleges Georgetown University had the strongest nine, winning seventeen out of twenty games. Holy Cross deserved second place, with Lafayette and Penn State following in the order named.

BASKETBALL. The basketball championship of the Intercollegiate League was won for the third year in succession by the five representing the University of Pennsylvania. The University of Chicago captured the Western Conference title but met defeat in a post-season series with the Pennsylvania quintet.

Probably the strongest amateur basketball team in the United States was the five of New York University which carried off the Amateur Athletic Union championship in a tournament held at Atlanta, Ga. New York University was not a member of the Intercollegiate League but challenged the title-winning Pennsylvania five to a series of post-season games to settle the question of supremacy. The fact that Penn had already arranged to meet Chicago, the Conference champion, made this test impossible.

BASQUE. See PHILOLOGY.

BATES COLLEGE. A non-sectarian institu-

tion of higher education at Lewiston, Maine; founded in 1864. The summer school enrollment was 107. In the fall of 1920, there were 526 students and there were 39 members in the faculty. The productive funds in 1920 were \$1,174,000 and the income \$141,998.07. In 1920 a large gift was offered by the General Education Board, on condition that a certain amount be raised by the college and a gift of \$500,000 was promised by the Northern Baptist Convention, if its efforts to raise a certain sum met with the expected success. President, Rev. Clifton D. Gray, elected Nov. 29, 1919. He began his duties in May, and was inaugurated at the commencement.

BATTERSHALL, WALTON WESLEY. Clergyman, died March 10th. He was born at Troy, N. Y., Jan. 18, 1840, graduated at Yale College, 1864, and at the General Theological Seminary in 1866. He was ordained priest in 1866 in the Protestant Episcopal Church and he was rector at Rochester and Albany, becoming in 1902 archdeacon of Albany. Besides works pertaining to the local history of Albany, he wrote *Interpretations of Life and Religion* (1897).

BATTLE CRUISER. See BATTLESHIPS AND OTHER WAR VESSELS.

BATTLESHIPS AND OTHER WAR VESSELS. The United States and Japan were the only two nations building battleships in 1920 so we must look to their latest designs for evidence of the present trend of naval opinion as regards such vessels. The latest American battleships are to be of 43,200 tons displacement, have a speed of 23 knots, carry 12 16-inch guns, and be protected against torpedoes, plunging fire, and bombs from aircraft, to an extent not hitherto thought possible. The Japanese battleships of the *Negato* type are of 33,800 tons; speed, 23 knots; battery, 8 16-inch guns; protection about the same as in our *Colorado* class (32,600 tons) which they closely resemble in almost every way—displacement, battery, armor, etc. Two other ships supposed to be of this type have been laid down, the *Kaga* and *Tosa*, but there are strong grounds for believing that they are of nearly 40,000 tons and will carry 10 16-inch guns. We thus see that the tendency of battleship building is toward increased size in order to carry large guns and have greater protection against torpedoes and plunging fire at long range. As to the calibre of the battleship gun, we have apparently not yet reached the maximum, as both United States and Japan are building 18-inch guns and will doubtless mount them in future ships. Aside from the increases in size and battery power the most salient feature of new types of battleships is the increase in protection against torpedoes, plunging fire, and aerial bombs. During the war, the ease with which old-type vessels were quickly sunk by a single torpedo was in sharp contrast with the behavior of the later ships, several of which were kept afloat after two torpedo hits, and others kept station in battle after a single hit that would have sent an old-type ship to the bottom. In this respect the German ships behaved better than the British and showed that they had given much thought to submerged protection as well as to armor. The weakness of the German ships was in their batteries. One class of ships carried 11-inch guns and none carried larger guns than the 12-inch and only 10 of these except the *Oldenburg* class which, from

the antiquated method of placing the turrets, could only fire eight guns on each beam. The best of their ships were therefore inferior to our *Wyoming* class as regards battery and very much inferior in nearly every way to the *New York* and *Texas*, which were completed before the war broke out. The German guns had one important advantage, however, they were so mounted as to give a high angle of elevation and a consequent long range and heavy angle of fall very dangerous to weakly armored decks. This high angle of elevation has been embodied in all our recent ships; the 43,200-ton battleships and the battle cruisers having mountings permitting an elevation of 30 degrees.

BATTLE CRUISERS. The battle cruiser is merely a battleship in which a considerable amount of armor protection and some of the guns of the main battery are sacrificed to speed. Whatever the number of the guns that are retained, however, they are to be of the same calibre and power as the main battery guns of existing battleships. The necessity for some ships of this type in every large navy is now generally recognized, though to American ideas the Japanese seem to be overdoing the matter. But, as we have no direct insight as to their exact naval policy, we are not in a position to pass judgment on their views. The battle cruisers of the latest type are enormous vessels, equal in displacement to the largest battleships. In fact, the latest British and Japanese battle cruisers are very much larger than any battleships in either navy.

Of recent battle cruisers, the *Hood*, completed for the British navy in 1920, is one of the most interesting. While generally classed as a battle cruiser she closely approaches battleship specifications. The original plans of the *Hood* were approved by the Admiralty in April, 1916, a few weeks before the battle of Jutland. In view of the damage done to British and German battle cruisers in that action, the original plans were revised, the armor protection increased about 50 per cent, and certain other improvements in protection were embodied. The result was a considerable increase in displacement and draft and a slight decrease ($\frac{1}{2}$ knot) in speed. The principal details of the *Hood* are: Length, 860 feet; beam, 104 feet; mean draft, 28.5 feet; mean displacement, 41,200 tons; speed on trial, 32.1 knots; guns, 8 15-inch (45-cal.), 12 5.5-inch, 4 4-inch (anti-aircraft); armor belt, 12-inch; gun positions, 12 to 15 inch; total weight of armor, 13,800 tons. Torpedo tubes: 2 21-inch submerged; 4 21-inch above water. The underwater protection against torpedoes consists of a "bulge" extending from the bottom (which has no dead rise) to slightly above the water line. This projects 10 or 12 feet beyond the hull proper and is subdivided into water-tight compartments. Monitors and other craft fitted with bulges were, during the war, repeatedly torpedoed without other injury than increase of displacement.

The American battle cruisers of the *Constitution* class are not widely different from the *Hood*. Their principal details are: Length, 850 feet; beam, 101.7 feet; mean draft, 31 feet; displacement, 43,500 tons; main battery, 8 16-inch (50 cal.) guns; secondary battery, 16 6-inch and 4 3-inch (anti-aircraft); 4 submerged torpedo tubes and 4 above-water tubes, all 21-inch; the propelling machinery consists of 4 main genera-

tors and 8 propelling motors (2 on each shaft) of a total horse power of 180,000, designed to give a speed of 33.25 knots. The same "bulge" protection is fitted as in the *Hood*. Nothing definite has been published as to the armor of these ships but the belt is probably not over 10 inches and the gun positions about the same.

The new Japanese battle cruisers are of quite different dimensions to the British and American ships. The principal details are: Length (b.p.), 770 feet; beam, 105 feet; draft, normal, about 29 feet; draft, full load, about 31 feet; normal displacement, 41,000 tons; full load displacement, about 45,000 tons; the main battery consists of 10 16-inch guns; secondary battery, 16 5.5-inch; anti-aircraft, 4 3-inch; horse power, about 120,000 for 30 knots speed.

LIGHT CRUISERS. The same tendency to increasing size is shown in the new light cruisers in all navies. A few years ago such vessels were of 3500 tons or less. To-day they run from 4500 to 10,000 tons. The main cause of increase was, first, speed, then battery power. But the varying conditions of warfare, the increase in sizes of other vessels, the disappearance of the armored cruiser, and the changes in the strategic and tactical uses of the light cruiser have combined to increase its average size. The smaller type which served as destroyer flagships have, moreover, been largely replaced by flotilla leaders of 1800 to 2500 tons. The speed of the larger types of light cruisers (7000-10,000 tons) is usually 31 to 35 knots; of the smaller types, 28 to 32 knots.

DESTROYERS. Concerning that very important and useful naval craft the destroyer, there is little news to record. It was well developed and thoroughly proved and approved during the war. The United States is completing a large number, all provided for before the armistice. Great Britain, France, Japan, Spain, and Italy are building a few. The most popular size for ordinary sea-going destroyers is 1200 to 1300 tons. The great fleet nearly completed by the United States navy are of 1215 tons and have a designed speed of 35 knots that has been exceeded by 2 to 5 knots in most cases. The new Japanese destroyers are of about 1300 tons. The flotilla leader is becoming more and more a fixed and definite institution and is increasing in size. The flotilla leaders asked for in the last United States naval estimates were to be of about 2200 tons and have a speed of 37 knots.

SUBMARINE BOATS. The submarine is still more or less in the experimental stage—or at least in such a development stage that no one can tell exactly in what direction to look for the next success or improvement. All nations agree that it has come to stay and that it will be used against merchant shipping, but not in the German way. If the ship is to be sunk, the sinking is not to take place until the passengers and crew have their safety fully provided for—and this does not mean leaving them in open boats far from shore. In other words, the submarine must effect capture or destruction with the same regard to non-combatant life as was the custom for surface cruisers. Sinking without warning should cause the officer committing the offense to be hung for piracy and murder. The Germans have not been punished for their inhumanity and some other unscrupulous people in a future war are likely to follow in their footsteps.

The future use of submarines as commerce destroyers, mine-layers, and scouts is likely to produce new types specially suitable for the service. Other improvements looking to the safety, habitability, and fighting power of submarines are to be expected from time to time. In 1918, the Germans built boats of about 2200 tons (light-surface condition) and these carried 2 6-inch guns. Proposed submarine battleships were under consideration in Germany and elsewhere. Such vessels were to be of many thousand tons displacement, to carry armor on exposed parts and a battery of considerable power. Apparently we are still a long way from achieving a successful vessel of this type. The cruiser type, designed to operate in a humane way against the enemy's commerce, offers no special difficulties and can easily be brought out as soon as we have solved many problems in regard to submarines in general that are awaiting solution. One of these is higher possible surface speed accompanied by very economical surface cruising speed. Others are improved habitability and greater safety in operating. As at present constructed there are too many chances for accident. Very many accidents are due to lack of automatic stability in a wholly immersed submarine. Considerable trouble is brought about by lack of structural strength and rigidity, internal and external. The margin of safety is thought to be about as high as the available weights will permit—but weaknesses are often shown, and the danger must be obviated.

Submarines designed for normal use against naval vessels of the enemy are of three general types—the fleet type, the cruising type, and the harbor type. The fleet (designed to accompany the battle fleet) must have good surface speed, good habitability, and good offensive power; they must therefore be large—1200 tons or more. Cruising submarines include all those operating independently and are of various sizes (800 to 2000 tons) and possess various characteristics. A displacement of 800 to 1000 tons is commonly regarded as the most practicable, all things considered, but for certain purposes this would have to be greatly increased. The harbor type of submarine is usually 350 to 550 tons, habitability and radius of action being sacrificed.

Nearly all naval powers—even many weak ones—are experimenting with submarines. While the acid tests and enforced pressure of war are no longer behind these experiments, there is reason to believe that much is being learned and that the continued improvement in design is sufficient to afford encouragement.

BAVARIA. Formerly a constituent kingdom in the German Empire, but after November, 1918, a republican state under the new German government. Area, 30,562 square miles; population (1910), 6,962,109, including the Palatinate, whose area is 2372 square miles with a population (1910) of 937,085. To this was added the territory of the free state of Coburg, which decided to unite with Bavaria on Nov. 30, 1919. The Bavarian Diet adopted the bill for union by a unanimous vote March 11, 1920. The chief cities of Bavaria are: Munich, with a population (1910) 596,467, estimated (1914) 639,214; and Nuremberg with a population (1910) of 333,142, estimated (1913) 373,865. According to the census of 1910, the Roman Catholics formed 70.61 per cent of the population. Down to Nov. 11, 1918, the executive power was in

the hands of the kings of the Wittelsbach dynasty whose crown, hereditary, and the legislative power was in a parliament which consisted of an Upper House, comprising the royal prince and other dignitaries and life members appointed by the Crown, and a Lower House consisting of members elected by direct vote. The King down to November, 1918, was Ludwig III, born Jan. 7, 1845. The dynasty was deposed Nov. 22, 1918, and Bavaria was proclaimed a republic. A cabinet under the leadership of Kurt Eisner, a Socialist, took control of the government as noted in the preceding **YEAR BOOK**. Eisner was assassinated in February, 1918, and then for a time there was a struggle between the more moderate groups and the extremists of the Left who sympathized with the Bolsheviks.

In 1918 the chief crops, with their area and their yield in metric terms, were as follows: Wheat, 682,552 acres and 381,716 metric tons; rye, 1,190,875 and 630,796; oats, 1,075,977 and 639,830; potatoes, 741,715 and 2,509,335; vines on 43,522 acres yielded 15,811,620 gallons of wine. The livestock on June 1, 1919, were: Horses, 350,320; cattle, 3,672,801; sheep, 773,065; pigs, 1,106,300; goats, 442,838.

The budget is voted for two years. The ordinary budget for 1919 was: Revenue, 160,113,351 marks; expenditures, 613,829,458 marks. The debt in 1919 was 2,559,077 marks.

The moderate element tended steadily to get the upper hand. Meanwhile work on the constitution was going on and it was completed, Aug. 14, 1919. The new constitution created the free state of Bavaria wherein the people were the source of power. The executive power was vested in the ministry as a whole. The legislative power was in a Diet of one chamber elected for four years in the proportion of one to every 100,000 of the population; in the beginning of 1920 the members numbered 183. The new constitution abolished all privileges of birth and caste, separated the church from the state, and provided that all religious associations should be free in the exercise of worship and should have equal rights. The ministry as constituted on March 7, 1920, was as follows: Prime Minister and Minister of Foreign Affairs, Von Kahr; Education, Matt; Commerce and Industry, Hamm; Social Welfare, Oswald; Agriculture, Wuffelhofer; Finance, Koffler; Justice, Müller. The portfolio of the Interior was at that time held also by the Prime Minister.

The treaty provided for the union of Coburg with Bavaria. This was carried out February 10th, at Munich, by the representatives of the two governments. For an account of the movement in Austria for a union with Bavaria, see **AUSTRIA**, paragraphs on *History*. See also **GERMANY AND WAR OF THE NATIONS**.

BAYLOR UNIVERSITY. An institution of the higher learning, at Waco, Texas, founded in 1845. In the fall of 1920 there were 1209 students enrolled, and in the summer session, 814. There were 50 members in the faculty. The productive funds of the institution amounted to \$642,921.76 and the income for six months to \$20,086.67. There were 40,604 volumes in the library. President, Dr. S. P. Brooks, A.M., LL.D.

BEARD, ADELIA BELLE. Artist, died February 16th. She was born at Painesville, Ohio, and educated in private schools. After studying at Cooper Union and the Art Students League in

New York City, she taught classes in drawing and painting. She was well known as an illustrator for books and magazines, and especially for the illustrations for the books on birds and animals which bore her name.

BEAUX-ARTS INSTITUTE OF DESIGN. This society was incorporated in 1916 to carry on the work previously conducted by the society of Beaux-Arts Architects, run on a system similar to the Ecole des Beaux Arts in Paris. The report of the director of the school shows that for 1920 there was a great increase over 1919 in the number of students and of work done in the Departments of Architecture and of Mural Painting. In the Department of Sculpture there was no change in the number of students, but the work was of much higher grade than in 1919. All the students competing in 1920 in the finals for the Roman Academy scholarship were students of this Institute. The total number of students in the Institute was 1051. The 13th Paris Prize of \$1200 per annum for two and a half years' study in architecture at the Ecole des Beaux Arts in Paris was awarded to Duncan McLachlan. There were 118 original competitors. The Department of Interior Decoration, which was organized but three years ago, reports that it is getting on a firmer foundation and that work is progressing well. The officers of the Institute for 1920 were: Director, Lloyd Warren; chairman of the Board of Trustees, Thomas Hastings; and secretary, William L. Bottomley. Headquarters are at 126 E. 75th St., New York City.

BEAVAN, THOMAS DANIEL. Roman Catholic Bishop, died at Springfield, Mass., October 5. He had been for twenty-eight years head of the Springfield diocese. He was born at Springfield in 1849 and graduated at Holy Cross, Worcester, Mass., 1870; taught at the College of Loyola, Baltimore, in 1870-72; then studied at the College of Montreal, and in 1873 was ordained priest. For the ten years following 1879 he was a pastor at Spencer, Mass., and then for three years was a pastor at Holyoke. He was consecrated Bishop of Springfield, Oct. 18, 1892.

BEEF. See **LIVE STOCK**.

BEER, GEORGE LOUIS. American historian, died March 15th. He was born on Staten Island, New York, July 26, 1872, and graduated at Columbia in 1892. For a number of years he was engaged in the business of an importer of tobacco. He lectured on European history at Columbia in 1893-97. From 1918 to 1919 he was chief of the Colonial Division of the American Commission to negotiate peace in Paris and was then appointed Director of the Mandatory section of the Secretariat of the League of Nations.

BELGIAN CONGO. See **CONGO, BELGIAN**.

BELGIAN RELIEF. See **RELIEF FOR WAR VICTIMS**.

BELGIUM. A kingdom of western Europe situated between France and the Netherlands, overrun and held by the Germans throughout the war but restored to independence in the autumn of 1918. Capital, Brussels.

AREA, POPULATION, ETC. The total area is 11,373 square miles. The population Dec. 31, 1910, was 7,423,784; estimated Dec. 31, 1918, 7,555,576. Of the nine provinces the four having the greatest population are Antwerp, Brabant, East Flanders, and Hainaut. The chief towns with their populations on Dec. 31, 1917, are: Brussels, including suburbs, 679,931; Ant-

werp, 309,516; Liège, 169,790; Ghent, 163,595. In 1910 those who spoke Flemish only numbered 3,220,662; French only, 2,833,344; French and Flemish, 871,288; German only, 31,415. Those who spoke all three languages were 52,547. (See paragraph below, *Malmédy and Eupen*.) The majority of inhabitants are Roman Catholic, but no recent figures are available except for the clergy. In 1919 the higher clergy of the Roman Catholic Church numbered 85; the lower clergy, 5775. There were 3667 Roman Catholic churches in the six dioceses. School statistics are not available for the years following the outbreak of the war. There are four universities, of which those at Liège and Ghent are state institutions and those at Brussels and Louvain are free. The students in 1918-19 numbered, Brussels, 2212; Ghent, 1006; Liège, 2109; Louvain, 2783 (1920). The various special technical schools attached to the universities had 2691 students in 1918-19.

EUPEN AND MALMÉDY. Belgium sovereignty was proclaimed over these regions, January 12th; and on January 22nd, the high commissioner, M. Baltia, issued a proclamation promising religious freedom, the introduction of an educational system like that of Belgium, and the standardization of labor. They were formally annexed to Belgium in September. This was in accordance with the plebiscite held under the Treaty of Versailles and confirmed by the League of Nations. Both districts are of considerable importance. Malmédy has an area of 813 square kilometers and is the centre of the tanning industry and of other important industrial enterprises. Eupen has an area of 180 square kilometers and its industrial population is largely engaged in the textile industry.

PRODUCTION. The following information in respect to agricultural conditions was supplied by the United States Bureau of Foreign and Domestic Commerce in December, 1920:

Belgium is intensively developed agriculturally. Of the entire area of the country—7,275,525 acres—4,382,629 were cultivated in 1913. Figures for 1919 show 298,508 farms, of which approximately 28 per cent were cultivated by their owners. One-seventh of the population was estimated to be working on farms. The devastated region, amounting to but 250,000 acres, lies mostly in West Flanders; and of this it was estimated that 25,000 acres would be cultivated during 1920. According to specialists, agricultural restoration would be completed in two and one-half years.

The following table shows restoration accomplished in principal crops at the end of 1919:

Crops	Area cultivated		Amount produced	
	1913 Acres	1919 Acres	1913 Met. tons ^a	1919 Met. tons
Wheat	394,110	279,243	401,950	269,300
Rye	641,213	496,256	570,595	347,520
Barley	84,095	75,118	91,808	78,750
Sugar beets	129,527	112,183	1,391,917	73,062
Oats	671,856	549,798	696,095	390,750
Potatoes	395,041	319,258	3,200,932	2,070,140

^a The metric ton equals 2,204.6 pounds. ^b Sugar.

To aid agricultural reconstruction a central administrative office of agricultural reconstruction was created. Other measures to this end were: Appointment of experts and agents; special service to farmers of the devastated areas

in parceling land, restocking and soil-working; general distribution of live stock, fertilizer, seed, and agricultural machinery; measures for conserving domestic animals and fertilizers; organization of farming contests; systematic destruction of rodents; installation of a housekeeping school at Locre; and organization of experiment fields. In the course of the year 1919 the department acquired 50,000 metric tons of sodium nitrate, and distributed 35,494 horses, 8714 cattle, 4035 sheep, 937 pigs, 409 goats, 1901 cocks and hens, and 995 chickens. The work of 1919 anticipated the law of Nov. 15, 1919, and the programme for 1920 continued this work, adding thereto by loans from the German war indemnities and by agitating for subsidies to dairies serving the devastated regions. See **AGRICULTURE**.

During the eighteen months ending July 1, 1920, there was an extraordinarily rapid reconstruction of the economic life of Belgium and it was estimated that within less than a year all the industries with the exception of the steel plants would attain the production of the period before the war. Some of them had even passed that point in 1920. Agricultural recovery began at once after the armistice, and the crops in 1919 fully equalled those in 1913. The beet crop surpassed that of 1913 by 4,000,000 pounds. At the end of the war there were over 800,000 persons receiving the unemployment allowance but by the middle of 1920 the number had been reduced to less than 200,000. The following table prepared by the Minister of Industry, Labor, and Provisions shows the progress in the resumption of work from December, 1919, to June, 1920:

Industry	December, 1919 Percent- age	June, 1920 Percent- age
Mines	103	109
Quarries	57	70
Metallurgical	64	85
Ceramic	71	96
Glass	81	96
Chemicals	74	95
Alimentation	89	89
Textile	61	83
Clothing	67	80
Construction	86	302
Wood and furniture	66	80
Hide and leather	58	75
Tobacco	75	95
Paper	78	98
Books	76	77
Arts and crafts and instruments of precision	82	64
Transports	107	99

Industrial establishments of more than 20 workers employed in June, 1920, 606,960 persons, while in June, 1913, their working personnel amounted to 650,889 units. The working population in June, 1920, as shown above, thus represented 93 per cent of that of the corresponding period of 1913. In December, 1919, the establishments for which a census was taken had presented a resumption percentage of 76. From the point of view of production for the first six months of 1920, compared with that of 1913, it was noted that out of 3666 establishments in 1407, or 38 per cent of the number of enterprises considered, the production was more than 75 per cent. A little more than half of these enterprises, 2172 out of 4268, or 50.88 per cent, employed more than three-quarters of their personnel. The most important causes of unem-

ployment were: Lack of material, owing to destruction or removal by the enemy; lack of capital or delay in payment of indemnities; lack of orders; lack of raw material; lack of labor. The following table published by the Minister of Economic Affairs shows the percentage of recovery in respect to output based on the average of the year 1913:

Industry	Monthly average output for 1918 Tons	Output for April, 1920 Tons	Percentage of recovery
Coal	1,900,000	1,900,750	100
Coke	125,000	78,532	62.8
Cement	73,000	54,416	74.52
Blast furnaces	210,586	75,129	35.60
Finished iron and steel	154,821	77,718	50.30
Half-finished products	132,389	44,837	33.40
Converter steel	182,681	76,963	42.65
Martin steel	17,717	15,774	89.05
Raw zinc	16,800	6,527	38.83
Refined sugar	*9,206,967	*10,973,504	119.15
Paper and cardboard	11,528	10,064	87.32
Cotton spinning	*1,700,000	*1,400,000	82.32
Linen weaving	*280,000	*219,256	78.36

* Kilos. † Spindles. ‡ Looms.

In the linen industry, there were altogether about 375,000 looms in the country in 1913, but the recovery is estimated in the above table on the basis of the reports of the combination, which in 1913 had 280,000 looms.

MINERAL INDUSTRIES. Six new mines were opened in 1919 offsetting the production lost by those closed or destroyed. In August, 1920, it was estimated that the metallurgical industries had reached 44 per cent of their 1913 production of pig-iron, 68 per cent of finished iron, 52 per cent of finished steel, and 43 per cent of raw zinc. In 1913 Belgium stood fifth in the number of blast furnaces, being surpassed only by the United States, England, Germany, and France. On July 1, 1913, there were 55 furnaces in operation. By Jan. 1, 1920, the number had been restored to 52. Nearly half as much pig-iron was imported in the first five months of 1920 as during the whole year of 1913. The iron and steel industries were in a bad condition at the time of the armistice, but by the end of 1919 they were employing 60 per cent of the pre-war operatives and turning out 31 per cent of the pre-war output. See IRON AND STEEL.

ECONOMIC CONDITIONS. According to the Minister of Economic Affairs, while the coal mines in Belgium in the summer of 1920 were surpassing their 1913 production (though the quality of the coal produced was inferior), the metallurgical industry had reached 44 per cent of its 1913 production of pig iron, 68 per cent for finished iron, 52 per cent for finished steel, and 43 per cent for raw zinc. The cotton mills, in relation to their production figures for 1913, were producing 82 per cent, the linen mills 73 per cent, the artificial silk mills 68 per cent, the raw-leather factories 74 per cent, and the paper mills 87 per cent. As to prices, the official index number on June 15, 1920, showed a drop from 473 in April and May to 462, but the Brussels index at the same time mounted to 493, the highest point ever reached.

The labor situation at the beginning of the year appears from the following information supplied by the United States Bureau of Foreign and Domestic Commerce in December, 1920:

An official investigation of the Minister of Labor in December, 1919, revealed that Belgian industry was then employing 76 per cent of its 1913 workers, labor in coal-mining and transportation showing an excess. Many had gone to France or elsewhere for the greater remuneration, some had returned to the land, while others were still drawing assistance funds. The following table indicates the resumption of work in different industrial groups:

Industries	Number of workers		Percentage of resumption
	Number of enterprises	December, 1919	
Mines	189	153,370	103
Quarries	368	30,901	57
Metals	784	149,760	64
Ceramics	149	14,055	71
Glass	59	28,149	81
Chemicals	199	24,485	74
Foodstuffs	310	22,271	89
Textiles	967	129,524	61
Clothing	219	12,351	67
Construction	123	9,785	86
Wood and furniture	284	16,866	66
Hides and leather	150	12,752	58
Tobacco	88	6,870	75
Paper	78	6,501	78
Books	141	7,874	76
Arts and precision	89	5,120	82
Transportation	66	12,877	107
Total	4,263	643,000	76

The great increase in cost of living during and following the war was bound to result in demands for higher wages from every trade. To support these demands unionism grew by leaps and bounds, the number of union men in December, 1919, being 629,736. Strikes during 1919 numbered 372—nearly all for increased wages—and involved 184,555 workers.

COMMERCE. Foreign trade had made enormous progress since the war and even as compared with the year 1919 imports were said to have increased 267 per cent in quantity and 188 per cent in value during eight months, and exports 54 per cent in quantity and 608 per cent in value. The chief imports in 1919 had been manufactured articles, but in 1920 they were raw materials. Trade was resumed with Germany and during the first eight months of 1920 goods were imported from her to the value of 486,000,000 francs, while the exports to Germany amounted to 778,000,000 francs. At the close of the year there was still due from Germany a large proportion of the reparations. Belgium had the priority claim on the payment in gold of 2,500,000,000 francs before May 21st. Germany was to deliver \$800,000,000 worth of cattle, machinery, etc., to replace losses. Individual claims for war losses were placed at \$200,000,000. Belgium was to get 8 per cent of the German output of dyestuffs and chemicals, of which under the Treaty, 25 per cent was to be turned over to the Allies, down to the end of 1924.

FINANCE. The following information was supplied by the United States Bureau of Foreign and Domestic Commerce: The general budget for the fiscal year 1920, as introduced in the Chamber Jan. 20, 1920, provided for expenditures covering 8,566,410,731 francs and for receipts of 3,331,561,559 francs—expenditures exceeding receipts by 5,234,849,172 francs. Receipts and expenditures are classified in the budget as ordinary, extraordinary normal, extraordinary war,

and exceptional. Ordinary expenses increased over those of 1919 by 1,016,281,780 francs, due principally to increases in wages, charges of war, and the gendarmerie. Excess of ordinary expenditures over receipts of the same nature attained about 650,000,000 francs. This condition was influenced to the amount of 230,000,000 francs by the financial result of government administration of railroads, postal service, telegraph and telephone and marine. With industrial and commercial development and increase in the tariff, the situation would be modified. It was expected that military expenses would be compensated through reimbursement by Germany of an estimated expense of 95,000,000 francs for occupying the Rhine district. The extraordinary normal expenditures (near 400,000,000 francs) were for railroads, highways, national defense, canals, and rivers. Extraordinary war expenses (near 6,000,000,000 francs) affected reconstruction of devastated regions, revictualing of civilian population, war damages, railroads, advances on account of Germany's debt to Belgium, reconstitution of military buildings and army equipment, pensions, etc. Belgian national finances were thoroughly sound at the outbreak of the war. The public debt in 1914 amounted to 4,890,000,000 francs. Per capita wealth was estimated to be 7,247 francs and foreign investments 8,500,000,000 francs. Dec. 31, 1919, practically one year after the Germans had been driven from Belgium, the national debt stood as follows:

Items	Francs
Pre-war consolidated and floating debt ..	4,528,713,484
Direct pre-war debt	314,283,588
Loans since armistice:	
Monetary restoration bonds	3,040,342,700
5 per cent national restoration loan ..	1,559,637,200
3 per cent loan, second series	1,752,200
Treasury bonds	698,517,095
Advances from allies	1,247,488,633
Interprovincial debt (German war imposition)	2,347,800,000
Advances from Banque Nationale ..	5,800,000,000
Total	19,533,434,900

RAILWAYS. In 1919 out of the 2,200 kilometers of main railway lines destroyed, there remained only 55 to be rebuilt. Most of the bridges had been rebuilt. By July, 1920, the main lines had been so far reconstructed that the administration was planning to restore the branch lines, and a practically complete restoration was expected by July 1, 1921.

SHIPPING. There had been great damage done by the German armies in their retreat to the waterways in western and southwestern Belgium. As soon as this country was liberated the roads and bridges service set to work and by 1920 the devastation had been to a considerable degree repaired. The merchant marine in June, 1920, included 21 ships belonging to the state, and 171 vessels commercially owned, representing a gross tonnage of 378,630.

DEFENSE. At the close of the year, the military programme was absorbing public attention, and an important bill for the reorganization of the army was laid before the Chamber Dec. 11. It fixed the average effective of the army for 1921 at 100,000 men and besides that, 13,500 men detailed for the occupation of the Belgian zone on the right bank of the Rhine. See **NAVAL PROGRESS.**

GOVERNMENT. The executive power is in the King, who acts through a responsible ministry, and legislative power is in the King, Senate and Chamber of Representatives. The King in 1920 was Albert, born April 8, 1875, succeeded to the throne Dec. 17, 1909. He married Oct. 2, 1900, Princess Elizabeth of Bavaria, by whom he had the following children: Prince Leopold, Duke of Brabant; Prince Charles, Count of Flanders; and Princess Marie José. At the beginning of 1920 the leading parties in Parliament were the Catholics, Socialists and Liberals, the two former having a large majority.

At the beginning of 1920, the ministry was composed as follows: Prime Minister and Minister of Finance, L. Delacroix; Minister of Economic Affairs, H. Jaspar; Minister of Foreign Affairs, Paul Hymans; Minister of Education, J. Destree; Minister of Interior, J. Renkin; Minister of Agriculture, Baron A. Ruzette; Minister of National Defense, P. E. Janson; Minister of Justice, E. Vandervelde; Minister of the Colonies, L. Franck; Minister of Industry, Food Supply, and Labor, J. Wauters; Minister of Railways, Marine, Post and Telegraph, P. Poulet; and Minister of Public Works, E. Anseele. For new ministry, see below.

PARLIAMENT. Early in the year Socialists lost six seats in the Senate. Eight seats had been declared vacant on Feb. 6th, on account of the failure of the candidates to meet the income tax requirements before the elections, and in the by-elections which followed, the Socialists failed to reelect six of their representatives. A bill giving women equality with men in respect to voting in municipal elections, passed the Chamber March 10th, by 115 to 22 and the Senate by 60 to 33. In August, M. Hymans, the foreign minister, retired because during his absence his colleagues had refused to authorize the transport of war munitions into Poland. M. P. E. Janson, the war minister, resigned in September. Meanwhile, in May, M. Renkin, Minister of the Interior, had resigned as a protest against the agreement between Belgium and Holland. There were other signs of dissension in the cabinet and the crisis began as soon as the king returned to Brussels. M. Vandervelde, the Socialist Minister of Justice, supported by about one-third of the Chamber of Deputies, tried to force the Socialist and pacifist policy upon the ministry. In this he was supported by the Minister of railways, who was a champion of the Flemish party. After various combinations were tried, the King named as Prime Minister, M. Carton de Wiart, a member of the Right. There was opposition to him on the part of the Minister of Railways and his pro-Flemish supporters, but M. de Wiart succeeded in forming a combination of the Right, the Liberals and the Socialists. The principal issue at this time was that of military service. The Socialists opposed the present plan, and recommended service for six months, while the general staff demanded service for a year or at least ten months. There was much discussion over the question whether six months sufficed for the making of a soldier, but the general staff insisted upon a longer period. At this juncture, M. de Wiart had either to dispense with the support of the Socialists or to renounce the formation of a ministry. Finally, M. Vandervelde decided to consult the Socialist party by means of a referendum. The Socialist congress decided by a vote of 339,874 against

221,161 in favor of participation in the government on the basis of a provisional compromise proposed by M. Carton de Wiart. M. Vandervelde consented and accepted the portfolio of justice in the new ministry. Thus the new ministry like its predecessor was a combination.

THE NEW MINISTRY. The new ministry, announced November 30th, was composed as follows: Premier, Carton de Wiart; Minister of Justice, Vandervelde; Foreign Affairs, Jaspar; Economic Affairs, Van de Vyvere; National Defense, Devèze; Railways, Neujean; Science and Art, Desbree; Industry, Labor and Food, Wauters; Public Works, Anseele; Finance, Colonel Theunis; Agriculture, Ruzette; Colonies, Franck. The new Prime Minister, M. De Wiart, was well known as the author of standard texts on international law. He had been the head of the Belgian mission to the United States in 1914. The ministry comprised four Catholics, four Socialists, three Liberals and one Independent. The programme of the new ministry as set forth by the Prime Minister aimed at national concord and democratic action and would confine itself to problems that were immediately pressing, first of all, the revision of the constitution. In respect to foreign policy, Belgium would watch scrupulously over the execution of the Treaty and would support especially her Allies, France and England. It declared that the Franco-Belgian military accord would certainly reinforce the guarantees of peace.

THE SOCIALISTS. One of the first concerns of the Socialists toward the close of the year was the attitude of the Labor party, which was divided between the minority of extremists and the more conservative majority. The chiefs of the Socialist party had pronounced against the extremists and a member of the cabinet, himself a Socialist, had condemned the attitude of those who were causing a division in the party. He especially attacked the sort of Socialism which had resulted in the peace of Brest-Litovsk and the Bolshevik Socialism which had resulted in a dictatorship by a minority. Socialism must rid itself of the anarchists, he said, if it was to keep its solidarity. The inference from his remarks was, that the extremists ought to leave the party. It was estimated that if they did leave the party, they would make up only a small group, numbering hardly more than 10 per cent of the Belgian Socialists. See **SOCIALISM**.

FOREIGN AFFAIRS. Belgium and the Netherlands ratified the treaty in March for the settlement of the boundary and waterway questions, especially as regards the river Scheldt. According to the government programme announced in December the policy to be pursued in foreign affairs was one of peace and independence. It would insist upon the strict execution of the treaty, and especially upon the neutralization of the left bank of the Rhine and the complete payment of the indemnity by Germany. The method recommended at the conference of Spa was approved. The return to Belgium of Malmédy and Eupen was final and the authority of Belgium could not be discussed by Germany. The foreign ministry on December 8th referred to the language of the German government in respect to the occupied regions of Germany, saying the German Chancellor Feurenbach and Dr. Simons had entered those regions and made addresses of a provocative kind: that the Allies had protested

against this, and that if the facts were as they had been represented to be, the Allies would forbid members of the German ministry to enter the occupied regions. The minister defended the Government against the attacks of the pro-Flemish party upon the Franco-Belgian treaty. He expressed the hope that England would finally join France and Belgium in their defensive alliance. As to the negotiations with Holland, he hoped to have an early settlement, which however could not be made so long as the Dutch government refused to acknowledge the Belgian right to the waters of Wielingen. As to commercial relations with the Soviet government, he believed they should be opened, but that there should not be any renewal of political relations. See **WAR OF THE NATIONS**.

OTHER EVENTS. King Albert after a tour in Brazil landed at Lisbon and journeyed thence by airplane to Paris and from Paris to Brussels, arriving in the latter city November 3rd. At the meeting of the Belgian Trade Union Congress October 19th, a resolution was passed demanding the socialization of industries. A coal strike in the Charleroi district November 2nd on account of the refusal of employers to meet the demand for an increase of wages, spread to other regions and was threatening a general strike November 15th. Difficulty arose with the Netherlands at the beginning of November on account of the demand of Belgium for the extradition of the former librarian of the university of Ghent, who had been accused of treason for engaging in the Flemish movement when Belgium was under the Germans. The Dutch government referred the subject to a commission.

BENEDICT, ELIAS CORNELIUS. Banker and yachtsman, died at Greenwich, Conn., November 23. He was born at Somers, N. Y., Jan 24, 1834, and became a clerk in a Wall street office when a boy. After 1857, he organized the firm which bore his name and played an important part in the financial life of the city. He was better known in later years as a yachtsman, taking part in many extensive cruises and on one occasion being wrecked off the coast of Cuba.

BENOIT, PIERRE. See **FRENCH LITERATURE**.

BENSON, SIR RALPH SILLERY. British-Indian jurist, died at Dublin, Ireland, in October. He was born in 1861 and was educated at Trinity college, Dublin. Entering the civil service in 1871, he became registrar at the High Court of Madras, 1873, and was a judge in that Presidency from 1888-1913. He attracted attention by his work in famine relief at Cuddapah in 1876-78.

BERBER. See **AFRICA** and **PHILOLOGY**.

BEREA COLLEGE. A non-sectarian co-educational institution at Berea, Ky., founded in 1858. In the summer session of 1920, there were 214 students enrolled and in the regular fall session there were 794. The teaching staff numbered 138. The library contained 36,787 volumes. Dr. William Goodell retired from the presidency June 9th. On September 1st the following members were added to the faculty: Wilbur Greeley Burroughs, Professor of Geology and Biology; Noah Calvin Hirschy, Associate Professor of Romance Languages; Katherine Shepard Hayden, Assistant Professor of English Literature; Mary Thompson Sherwood, Assistant Professor of English; and Luther Martin Ambrose, Instructor in Chemistry. William James Hutchins, D.D., was inaugurated president, October 22.

BERKSHIRE FESTIVAL. See **MUSIC, Chamber-Music.**

BERKSHIRE STRING QUARTET. See **MUSIC, Chamber-Music.**

BERMUDA. A British colony in the West Indies, consisting of a group of small islands in the west Atlantic about 580 miles from Cape Hatteras, North Carolina, and 677 miles from New York. For many years they have been a favorite resort for American tourists, being celebrated for their climate and scenery. About twenty of them are inhabited. The total area is about 19.3 square miles; population, Jan. 1, 1919, 21,840, of whom 7,443 were whites. American visitors have averaged about 22,000 annually. Commerce and finance statistics follow:

	1915	1916	1917	1918
Imports	2579,828	2734,799	2674,493	2692,742
Exports	107,666	139,825	207,714	119,977
Revenue	106,467	107,055	100,447	91,645
Expenditure . .	97,643	109,652	105,867	90,684
Shipping * . .	1,748,337	1,630,163	547,835	732,613

* Tonnage entered and cleared.

The chief imports in 1918 were: Provisions; flour and meal; cotton goods; ale and beer; hardware and cutlery; groceries; oats; coal; sugar; apparel; leather goods; cattle. The chief exports were onions, potatoes and other vegetables. It is under a governor assisted by an executive council of seven members and a legislative council of nine members, both appointed by the crown, and a representative assembly of thirty-six members. The governor at the beginning of 1920, was Sir James Willcocks.

BESSARABIA. A former government of the Russian empire; united to Rumania in 1919. It extends from Galicia south toward the Black Sea, with Podolia and Kherson on the northeast, Moldavia on the south and southwest, and the Dobrodja on the south; area, 17,146 square miles; population, estimated Jan. 1, 1915, 2,686,600; estimated in 1919, 2,344,800. The racial elements are Moldavians and other Rumanians, Little Russians, Poles, Bulgars, Jews, Armenians, Greeks and Tatars. There are also some German and Ruthenian colonists. About 2,000,000 of the inhabitants are said to be dependent upon agriculture. After the defeat of the Central Powers, there was a Rumanian movement as described in preceding **YEAR BOOK**, which was the subject of much discussion in the press, being criticized on the one hand as a mark of the imperialist policy of Rumania and on the other hand justified as conforming to racial affinities and to the wishes of the people. In 1919 as a result of the peace treaties it remained in the hands of Rumania. See **RUMANIA**. It has been said in preceding issues of the **YEAR BOOK**, that Rumania had practically secured control of Bessarabia and claimed that on national grounds the country should be attached to her. This claim was disputed in certain quarters, where it was held that neither historically nor ethnographically were the claims valid. The proposal of a plebiscite by the Russians was refused by the Rumanians who held the country and government under a military occupation beginning in 1918. On Oct. 28, 1920, the governments of Great Britain, France, Italy and Japan signed at Paris a treaty with Rumania, ceding to her the former Russian province of Bessarabia. At the close of the year there were reports of an impending conflict between

the Reds and the Rumanians over its possession. During the Peace Conference the American delegates had opposed the giving of Bessarabia to Rumania. Troops of the latter occupied it nevertheless and some months after the American delegates had withdrawn, the French, British and Italian governments signed an agreement with Rumania under which Bessarabia was annexed. In October, 1920, the Soviet government began to send protests to Rumania on the subject of her occupation of the country.

BESSE, DOM. French ecclesiastic, prominent in the order of the Benedictines, died in August. He had devoted his life to propaganda for the Church, and to the education of the people in Catholic doctrines. He made a special study of the liturgy and published exhaustive works on the subject. While applying himself to the writing of articles for the periodicals on behalf of Catholicism and popularizing Catholic knowledge so far as possible, he believed the most effective means was to appeal to the higher intellectual classes and to this end he published twenty volumes on the subject of the Church and monarchy, besides treatises on liberal Catholicism, the Church and liberty, and the Syllabus.

BETHLEHEM BACH FESTIVAL. See **MUSIC, Festivals.**

BIBLE SOCIETY, AMERICAN. This organization was founded in 1816 for "the sole purpose of encouraging a wider circulation of the Holy Scriptures without note or comment," to all people, without denominational or racial discrimination. These Bibles, which are furnished at practically cost price, and in some cases free, are distributed all over the world, and in 68 languages, besides six systems for the blind. Reports for 1919 (the latest available statistics) show that 3,752,309 volumes of Scripture were issued during the year as against a total of 6,040,707 in 1918. Lack of supply and funds were the cause of this falling off. Of this total in 1919, 1,734,864 were issued in the home field, 1,954,671 in the foreign agencies, and 62,774 by foreign correspondents in other parts of the world. During its 104 years the Society has supplied 82,697,551 volumes in the United States and 55,206,388 in foreign lands, making a total of 137,903,939 volumes. During the year the Bible House printed 1,237,575 volumes or about half of its output in 1918, besides more than 420,000 pamphlets and reports. Distribution among the war forces of the United States continued in 1919 to the extent of 379,088 volumes, making a total distributed in this way of 4,920,543 during the war. Abroad 41,270 volumes were supplied, chiefly among the European forces, making a total during the war of 1,887,758, or a grand total of 6,808,301. Contributions of \$247,121.57 were received for this work. The work is carried on through 11 foreign agencies with about 1,000 workers, and nine home agencies with about 600 workers. Receipts during 1919 were \$857,037.23, as against \$853,544.80 for expenses, while for the Army and Navy Fund \$9,721.63 was received and expenses amounted to \$4,803.72. Appropriations for 1920 by the Board of Managers amounted to \$988,000. During the year 2,500 volumes of Scriptures were given to the large Czechoslovakian detachment as they passed through Norfolk, Va. The most notable contribution in translation and revision was the completion of the Union Revision of the Mandarin Version of the Bible. This makes the Scripture

now available in a language said to be spoken by more people than any other on the face of the earth, about 300,000,000. The translation of the four Gospels into Mukri Kurdish was completed. Gifts, legacies, and income from funds at interest during the year amounted to over \$495,000. The Society is affiliated with 155 Auxiliary Bible Societies who do much work locally. They also contributed to the central Society, contributing in 1919 about \$23,000. The officers of the Society in 1920 were: President, Churchill H. Cutting of New York; general secretaries, Rev. William I. Haven, and Frank H. Mann; and treasurer, William Foulke. *The Bible Society Record* is the official organ of the Society. National headquarters are maintained at Bible House, Astor Place, New York City.

BICYCLING. See CYCLING.

BILLIARDS. Professional billiards had an off year in 1920, when for the first time since 1863 no championship tournaments were contested. The fact that the professional cue experts could make more money performing at exhibitions in the various large cities contributed in no small degree to the dearth of title contests. William Hoppe was called upon to defend his 18.2 balkline honors in December but had little trouble in disposing of the challengers, Welker Cochran and Jacob S. Schaefer.

The amateurs saved the game in 1920. There were five challenge matches for the Metropolitan Amateur Cup in all of which Edward W. Gardner of Montclair, N. J., triumphed, thereby becoming owner of the trophy which had to be won five times by one player.

David McAndless of Chicago captured the Eastern amateur 18.2 title in a tournament held at the Amateur Billiard Club in November. Percy Collins also of Chicago, however, defeated McAndless in the Class A tournament of the National Association of Amateur Billiard Players, held at Boston.

The national amateur pocket billiard tournament held at the New York Athletic Club again resulted in complete success for J. Howard Shoemaker, who had won every previous contest of the kind.

BIOGRAPHY. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE, etc.

BIOLOGY. See ZOÖLOGY.

BIRD, CHARLES. American brigadier general, died March 22. He was born at Wilmington, Del., June 17, 1838, and was made first-lieutenant in the First Delaware Infantry, May 20, 1860. He served during the Civil War, rising to the rank of colonel, and distinguished himself in the battles of Fredericksburg and Spottsylvania. During the Spanish-American war he was colonel and quartermaster of volunteers and was raised to the rank of brigadier-general of volunteers, Jan. 3, 1901. In 1902 he was retired with the rank of brigadier-general in the regular army.

BIRDS. See ZOÖLOGY.

BIRTH CONTROL. The birth-control movement has arisen anew in practically every civilized country of the world since the world war and especially during 1920. The idea brought recently to the fore in the United States by Margaret H. Sanger, advocating the knowledge to prevent conception as an immediate means for women's personal and economic freedom, differs in its viewpoint from the neo-Malthusian movement of England, although the methods are the

same. While there has been much controversy in all countries among the most eminent authorities on science and economics concerning the Malthusian doctrine, there was practically no controversy or dispute concerning the right of the individual woman to have knowledge whereby she may control the number of children in her family. During 1920 there was a new interest and a new centre of birth-control activities in Tokio, Japan, emanating from the movement in the United States. There was also increased activity in Mexico under the direction of Mr. and Mrs. Linn A. E. Gale. South America also came to the front and much of the literature published in the English language was translated into Spanish and circulated among the working people in the various South American countries. While in all the European countries there was a distinct interest in the principle of birth control, France on the contrary, alarmed at her great losses through the war, started a vigorous campaign to increase her population. The birth rate is increasing in France, but the death rate of infants is also on the increase, so that it may take two or three generations of human waste before France will ever increase her population to any extent worth while. Germany, on the other hand, has seen the result of prolific child-bearing, and to-day with her millions of children underfed and starving, the great mass of people there recognize that birth control adopted immediately is the only means of restoring economic balance. In Italy, Holland, Belgium, the Scandinavian countries, Austria, and practically all the other countries in Europe, there was growing interest and increased activity. In England this was especially true. A committee was then formed for the purpose of encouraging a reduction of births in all European countries. It was said by many publicists of England, such as Harold Cox, editor of the *Edinburgh Review*, Dean Inge, Dean of St. Paul's Cathedral, London; Mr. J. O. P. Bland, writer, and others, that the peace of the world depends upon an understanding of the population question, and that it concerns tremendously the English-speaking nations to understand this question, thereby encouraging the other over-crowded and high birth rate countries to bring down their population so that the world peace and prosperity may continue.

The centre of the movement in the United States is in New York City, 104 Fifth Ave., the organ of which is the *Birth Control Review* with Margaret H. Sanger as editor.

BIRTH RATE. See VITAL STATISTICS.

BISSELL, GEORGE EDWARD. Sculptor, died at Mount Vernon, N. Y., August 30th. He was born at New Preston, Conn., Feb. 16, 1839, and served in the Civil War. He went into the marble business with his father and brother at Poughkeepsie, N. Y.; studied for years in France and Italy, and had studios in Paris and Florence. His works include many public monuments and statues, both in the United States and abroad. Among them were portrait statues of Abraham Lincoln and President Arthur, and bronze statues of Admiral Faragut and General Sherman.

BISSOLATI, SIGNOR. Italian Socialist politician, died at Rome, Italy, May 6. He was widely known as the leader of the Socialist element in Italy which remained faithful to the government during the war. In 1892 he became editor of the Socialist newspaper, the *Avanti*, and

he was elected to the Chamber in 1897. He continued a member of the house until his death. In 1911 the Socialist party split and Bissolati organized the group known as the Reformists Socialists. In June, 1916, after the fall of the Salandra government, he was appointed to the cabinet and served under Premier Bosselli as well as in the succeeding ministry of Orlando. During the war he made frequent visits to the front and addressed the soldiers. In February, 1917, he visited England.

BLAIR, HENRY WILLIAM. Senator, died March 14. He was born at Campton, N. H., Dec. 6, 1834, and was admitted to the bar in that State in 1859. He was a member of Congress, 1875-79, and 1903-05 and he served as United States Senator from 1879 to 1891. In 1891 he was appointed minister to China, but resigned on account of the Chinese objections to his attitude on the subject of Chinese immigration. He was the author of several important measures, including those for the extension of Federal aid to State education, for establishing the United States Labor Department and for various temperance, financial and educational laws. He wrote a pamphlet and a volume on the subject of the temperance movement.

BLANC, EDMOND. French sportsman, died at Neuilly, France, December 12. He was born in 1861, the son of François Blanc, who was known as the greatest gambling house proprietor of his time and who for many years possessed the gambling concession at Monte Carlo. Edmond was one of the most noted sportsman on the French turf. He was seven times the winner of the Grand Prix and the owner of a famous racing stable.

BLISS, HOWARD SWEETSER. Educator, died May 2. He was born in Syria, Dec. 5, 1860, and graduated at Amherst College in 1882. After teaching in various American colleges, he studied at German universities; was ordained in the Congregational ministry in 1890, and for several years was pastor at Montclair, N. J. He succeeded his father as president of the Syrian Protestant College at Beirut in 1902.

BLOODGOOD, ROBERT. See PAINTING AND SCULPTURE.

BOGART, JOHN C. Engineer, died in New York City, April 25. He was born at Albany, N. Y., Feb. 8, 1836; graduated at Rutgers College, 1853, and after 1877 was engaged on a great variety of important works, both for the government and for private corporations. He was for six years chief engineer of the department of Public Parks in New York; four years State engineer of New York, and he was engineer of the Board of Health in that State. Among his works were the Washington Bridge in New York, harbors in Venezuela, hydraulic and electric constructions at Niagara Falls, in the St. Lawrence River, in British Columbia, at Knoxville, Tenn., Atlanta, Ga., and many other places. He was also consulting engineer for various railways, for the Rapid Transit Commission of New York, etc., and was the only civilian member of the United States Government Board on the Lakes to the Gulf Waterway.

BOGERT, JAMES JOHN. Canadian prelate, died February 10. After 1897 he was archdeacon of Ottawa. He was born Aug. 2, 1835, educated at Trinity College, Toronto, and was ordained in 1858. He was rector of St. Auburns Church, Ottawa, 1881-1914.

BOGGIO, EMILE. See PAINTING AND SCULPTURE.

BOHEMIA. Formerly a crownland of Austria; after the collapse of the Central Powers in 1918 a constituent member of the new Czechoslovak state (see CZECHO-SLOVAKIA); in the northwestern part of the former Austro-Hungarian empire, bounded on the north by Saxony and Silesia; on the east by Moravia and on the south by Moravia and Lower and Upper Austria. The area is about 20,065 square miles; population, 1910, 6,769,548; estimated, 1913, 6,860,029; of whom over 2,000,000 were reported as engaged in agriculture. The racial elements according to the census of 1910 were as follows: German-speaking, 36.7 per cent; Bohemian, Moravian and Slovak, 63.19 per cent. The small remaining portion of the population was made up mainly of Poles and Ruthenians. The Catholics at the census of 1910 constituted 95.60 per cent of the population. Prague, the capital and largest city, had an estimated population, June 30, 1914, of 541,500, including suburbs. A large part of the population are engaged in industries, the number being given at 2,780,457. In the old empire the country was governed locally by a single chamber of 252 members and was represented in the lower house of the Reichsrath by 130 members.

BOHEMIAN CLUB FESTIVAL. See MUSIC, *Festivals*.

BOILERS. The most interesting tendency of boiler design in 1920, was the use of a greater number of tubes in height and in some cases the arrangement of these in two decks or groups. This resulted in increased efficiency as the only drawback was a small increase in draft resistance. Increased boiler pressures were becoming more common, 300 pounds being frequently encountered and 350 pounds figuring in the designs and installations of the year. In fact, competent authorities spoke of the possibility and feasibility of using boiler pressures even higher and test boilers operating up to 500 pounds had been employed. The tendency to construct large boilers also continued and units capable of evaporating 150,000 pounds of water in an hour were installed and were used to advantage with the largest steam turbines. This, however, seemed to be the limit of capacity, as it was preferable to have a number of units so that one or more could be shut down for repairs or when not needed.

Carrying out the general considerations for increased height, an interesting boiler plant was built for the Colfax Power Station of the Duquesne Light Co. Here a water-tube boiler of the cross-drum type was divided into two decks with 6 tubes in the lower deck and 14 in the upper, making 20 in total height, the tubes being 20 feet long. Those in the lower deck were exposed for their full length without baffles to the radiant heat of the furnace, while the upper group of tubes were baffled, there being a duplex furnace. Each boiler had 23,050 square feet of heating surface, so that each unit would have a nominal rating of 2305 horse power. In this type of boiler the superheater is located above the lower deck of boiler tubes.

Mechanical engineers were beginning to realize the necessity for intelligent supervision and close control of the boiler-room operation, and it was increasingly clear that all the best talent of the operating staff should not be devoted to the en-

gine room, especially in these days of automatic control.

Another step in the direction of increased boiler efficiency was where blast furnace gases were being burnt under boilers. This had been increased from 50 per cent, which once was considered satisfactory, to 78 per cent. Modern boiler practice demanded the increased use of economizers, but where the tubes were banked to an increased height as discussed above, economizers were not considered always necessary.

During the year progress was made in extending the use of the American Society of Mechanical Engineers' Boiler Code and four States, Oregon, Utah, Arkansas, and Maryland, adopted it and also the cities of Scranton and Seattle, so that it was in force in 17 States and 11 cities.

BOKHARA. A state of Central Asia, lying to the north of Afghanistan and to the south of the Russian provinces of Syr-Daria and Samarkand; formerly under the government of the Russian empire. The area is estimated at 83,000 square miles; population about 12,250,000; chief towns, Bokhara about 75,000 and Karshi about 25,000. The Russian Trans-Caspian traverses the country, passing within a few miles of the capital and extending to Tashkent. The chief products are corn, silk, tobacco, fruit, cotton, hemp, and the chief minerals are gold, salt, alum and sulphur. Camels and farm animals are raised. There is considerable trade with India, to which raw silk is exported and from which tea, indigo, muslin, drugs, etc., are imported. The reigning sovereign at the beginning of 1920 was Ameer Sayid-Mir-Alim Khan.

BOLIVIA. A republic situated in the interior of South America, to the west of Brazil and to the east of Chile. Sucre, the seat of the supreme court is historically considered the capital, but the actual seat of government is La Paz, the largest city.

AREA AND POPULATION. The area is variously estimated at from 514,155 square miles to 532,437 square miles and, including disputed territory, 562,047. The population was estimated in 1915 at 2,889,970, but a lower and perhaps more trustworthy estimate places it at 2,268,000. La Paz had a population in 1915 of 100,097; Cochabamba, 31,014; Potosi, 29,795; Sucre, 29,686.

EDUCATION. Primary education is free and compulsory and the number of elementary schools in 1918 was 450, with 3960 teachers and 58,400 pupils. Secondary instruction was supplied by 21 colleges, 5 clerical institutions, 5 private lycées, with 180 teachers and 2598 pupils; higher education by 19 institutions, with 78 professors and 1291 students. There are two universities, at Sucre and La Paz, and there is a National Conservatory at La Paz with a war college for officers. In 1918 the government spent 3,020,672 bolivianos for educational purposes.

PRODUCTION, COMMERCE, ETC. Agriculture is in a backward state, though mainly sufficing for local needs. The area under cultivation is placed at 4,940,000 acres, which will be increased by measures of irrigation recently undertaken. The chief crops are corn, wheat, barley, beans, potatoes, and other vegetables, but the main commercial crop is rubber, in respect to which Bolivia ranks next to Brazil among the exporting countries of South America. The rubber industries are centred in the Amazonian region. The production reached its highest figure in 1911 and then declined until 1915, but since then has rap-

idly increased. The exportation in 1918 amounted to 4,287,514 kilos, valued at 11,038,042 bolivianos. The United States was the chief country of destination, receiving 84.22 per cent of the exports in 1918. The chief natural resources of Bolivia are mineral and include tin, copper, antimony, lead, wolfram, silver and a varying of other ores, besides large salt deposits. The following table gives the weights and values of mineral exports in 1918:

	Quantity Kilograms	Value Bolivianos
Tin ore	48,801,027	129,611,139
Copper	26,000,381	7,746,343
Wolfram	8,418,859	10,640,392
Lead ore	4,589,432	1,795,207
Antimony ore	6,836,068	4,155,322
Bismuth ore	490,072	4,431,168
Zinc		
Silver	12,915,517	7,491,421

Total foreign trade for 1918 was as follows: Imports, £2,720,000; exports, £14,600,000. The railways open for traffic in 1918 had a mileage of 1354. The principal line is the Antofagasta and Bolivian railway, from Antofagasta to La Paz (735 miles).

On May 12, 1920, the Bolivian Congress granted to an Argentine firm a contract for the construction of the railway from La Quiaca in Argentine to Turpiza in Bolivia. This line the construction of which had been contemplated since 1915 will form another link in the chain which will eventually connect the Argentine and Bolivian railroad systems and furnish through communications between Buenos Aires and La Paz. In 1920 the 128 miles between Atocha and La Quiaca, Turpiza being a midway point, were open to mule travel, though the road was passable by automobile during a part of the year—from about the middle of May to about the middle of November.

The completion of this railway to Atocha was destined to have an important economic bearing as it would undoubtedly strengthen greatly the commercial relations between Bolivia and Argentina. Not only would it offer a better market to the products of the Provinces of Jujuy, Salta and Tucuman, but it would furnish the means of importing manufactured goods into Bolivia from as far as Buenos Aires, a traffic that was seriously handicapped by the difficulties of transport between the frontier and the Bolivian railhead at Atocha. A through route therefore would enable Argentine manufactures to compete with those of Chile, as well as with American and European products. The standard of value is gold and the monetary unit is the boliviano, of a par value in American currency of 39.932 cents. The expenditures for 1920 were estimated at 47,369,000 bolivianos and the revenue at 49,470,000 bolivianos. The debt on June 30, 1919, was placed at 68,869,161 bolivianos, of which 38,933,525 were external debt.

GOVERNMENT. The executive power is vested in a president elected for four years by direct popular vote and ineligible for reelection and in a cabinet of six members for the following departments: Foreign relations and worship; government and justice; finance; public works and industries; war and colonization; education and agriculture. Along with the president, two vice-presidents are elected for the same term. The legislative power is in a congress of two houses,

the senate with 16 members elected for six years, one-third retiring every two years, and the chamber of deputies of 70 members elected for four years, one-half retiring every two years. The president at the beginning of 1920 was Señor José Gutierrez Guerra, inaugurated Aug. 16, 1917.

HISTORY. Bolivia became involved in 1919 in the long-standing dispute between Chile and Peru over the ownership of the provinces of Tacna and Arica (see CHILE). This concerned a claim of Bolivia to territory in the province of Arica. It was reported on February 13th that Bolivia claimed possession of a port in this province. This brought a protest from Peru, whose government declared that it would not relinquish its title to the territory. Public opinion in Bolivia became exasperated and a mob attacked the Peruvian legation at La Paz. The United States government intervened as a peacemaker and the Brazilian government offered to arbitrate. The provisional government of Bolivia was recognized by France October 26th. At the same time the president, Bautista Saavedra, declared that the persons who had left the country on account of political disorders were free to return.

BOLSHEVIKI, BOLSHEVISM. See WAR OF THE NATIONS; SOCIALISM; and articles on countries under *History*.

BOOTS AND SHOES. The year 1920 was full of interest for the boot and shoe industry as well as for the consumers of these products. The year started with a general belief that there was underproduction and with good business at prevailing prices for manufacturers and retailers. By March, however, the retail dealers became frightened and soon prices fell rapidly and production was curtailed. Stocks of shoes were returned for slight or no reasons whatsoever, and there were many cancellations of orders. At the beginning of the year raw materials and leather were virtually at their peak, while at the end raw materials and finished product were at pre-war prices with labor plentiful at the shoe manufacturing centres. Despite the violent decline in prices the industry as a whole came through the year in a generally satisfactory condition though the wholesalers had cleaned out their stocks and taken their losses in most cases. During December there was a more hopeful tone with increased production indicated and keen competition for business. The usual changes in styles were marked during the year and the output of low shoes for women increased as their wear became more general. At the close of the year shoe factories in the Middle West were reported to have a fair amount of business with the possible exception of those in Michigan and Wisconsin where the cancellations of earlier orders had resulted in large stocks. Towards the end of the year the factories working on high grade men's shoes were operating four to five days a week, while plants making women's shoes, anticipating changes of styles, were more active.

An interesting sidelight on the industry was the opening of bids by the United States War Department for 250,000 pairs of service shoes for the United States Army. The lowest bidder agreed to make the first 50,000 pairs for \$4.07, which indicated a surprising reduction on materials and costs of manufacture. See HIDES AND LEATHER.

BORNEO. See BRITISH NORTH BORNEO.

BOSCHI, JULIUS. See ROMAN CATHOLICS.

BOSNIA AND HERZEGOVINA. Former provinces of the Turkish empire acquired by Austria-Hungary in 1908 and after the disruption of the Austro-Hungarian empire incorporated in the new southern Slav state of Jugo-Slavia (q.v.). Area, 19,768 square miles; population at the census of Dec. 31, 1910, 1,898,044.

BOSTON, MASS. See GARBAGE AND MUNICIPAL GOVERNMENT.

BOSTON SYMPHONY ORCHESTRA. See MUSIC, *Orchestras* and *Novelties*.

BOSTON, UNIVERSITY OF. A non-sectarian institution of learning at Boston, Mass.; founded in 1869. In the fall of 1920, the student enrollment was 8024, and there were 496 members of the faculty. The productive funds amounted to \$4,279,363, and the income for the year, \$864,477. The library of the university contained 126,392 volumes. The university comprises colleges of liberal arts, business administration, and secretarial science; schools of theology, law, medicine and education; a department of religious education and social science; and a graduate school. President, Lemuel Herbert Murlin, D.D., LL.D.

BOTANY. The Botanical Society of America, the Ecological Society of America, and the American Phytopathological Society, met at Chicago, Ill., Dec. 27, 1920, to Jan. 1, 1921, in affiliation with the American Association for the Advancement of Science. The British Association for the Advancement of Science met at Cardiff, Wales, Aug. 24 to 27, 1920. The first meeting of the Dutch East Indies Scientific Congress was held at Batavia, Java, Oct. 3 to 6, 1919. The Society of Economic Biologists of Great Britain held its meeting Dec. 10 to 11, 1919.

The Advisory Board of the American Plant Pathologists met in Washington, D. C., Jan. 28 to 31, 1920, to consider the establishment of a Phytopathological Institute. A summer meeting of the American Phytopathological Society was held Aug. 3 to 6, 1920, beginning at Staunton, Va., and extending its sessions through West Virginia and Maryland to Pennsylvania, studying en route the diseases of apples and peaches and the means employed for their control. The Canadian branch of the society met at Guelph, Ont., Dec. 11, 12, 1919, and the southern division at Atlanta, Ga., Feb. 24, 25, 1920. At all these meetings papers of botanical interest were read and discussed. A Crop Protection Institute was organized under the auspices of the National Research Council. Its membership is composed of plant pathologists, entomologists, chemists, and manufacturers who are interested in the problems of the control of plant diseases and pests.

Under the regulatory powers of the Department of Agriculture two new restrictive orders, of interest to plant pathologists, were promulgated. These are Order No. 41, which prohibits the importation of the raw or manufactured state of maize, broom corn, sorghum and related species, except under regulations, and Order No. 44 which restricts the introduction of all kinds of stocks, cuttings, and other propagating materials of fruits from Asia, Japan, Australia, Philippine Islands, etc., except under special permit.

Several new serial publications that are of interest to botanists made their appearance during the year, among them *Hereditas*, devoted to research in heredity; and the *Indian Journal of Botany*, which intends publishing papers on ecology, plant physiology and histology. The *Plant*

World, formerly published at Tucson, Ariz., has been merged with *Ecology*, the first number of which appeared early in 1920.

Among the botanists who have recently died were: J. G. Baker, long connected with Kew Botanical Gardens, England, Aug. 16, 1920; O. Beccarini, director, Botanic Garden, Florence, Italy, Oct. 25, 1920; G. Briosi, Italian plant pathologist, May 4, 1920; A. DeCandolle, Swiss botanist, May 29, 1920; Reginald Farrar, botanical explorer in China, Burma, and elsewhere, Oct. 16, 1920; J. M. Macoun, Canadian botanist, Jan. 8, 1920; W. Pfeffer, professor of botany, University of Leipzig, Jan. 31, 1920; F. Kolpin Raven, Danish phytopathologist, May 24, 1920; P. A. Saccardo, editor of *Sylloge Fungorum* and director Botanic Garden, Padua, Italy, Feb. 12, 1920; and C. A. Timiriazeff, professor of botany, University of Moscow; S. M. Tracy, American botanist and experiment station worker, Sept. 5, 1920.

The literature of botany has been very voluminous during the year, a large number of delayed contributions having become available. Only a very few of the many important papers can be noted here.

PHYSIOLOGICAL STUDIES. A notable contribution during the year was the report of the studies of Garner and Allard on the effect of the relative length of day and night on growth and reproduction in plants. By controlling the daily periods of illumination they were able to retard or accelerate growth and reproduction of a number of species of plants. The time required for plant growth from germination to flowering was increased or diminished by lengthening or shortening the period of daily illumination. When the period of daily illumination was shortened seed production was hastened and in this manner early and late maturing varieties of the same species were caused to mature at practically the same time. The normal yearly cycle of many plants was shortened or lengthened almost at will and annual, biennial and perennial plants were profoundly modified as to their behavior.

DeBestiero and Durand found, from a study of the growth of peas, that the dry weight of roots and aerial parts was increased with an increase of intensity of illumination. They claim that light loving plants are incapable of adapting their chlorophyll absorptive power to weak illumination and cannot make up their carbon requirements through greater absorption of organic carbon through the roots. On the other hand Rivera considers the accumulation of carbohydrates in plants is due to the number of hours which plants are exposed to sunlight and not the intensity of the illumination. Shanz found that ultra-violet and other short rays of light exert a remarkable effect on the development of plants. Anthocyanin was not found when ultra-violet rays were excluded, and the decomposition of chlorophyll was retarded in the absence of such rays. Ultra-violet rays are said to retard germination. Tsuji claims that ultra-violet rays may be utilized to accelerate growth of sugar cane and the ripening of such fruits as pineapples and bananas.

From a study of the hydrogenion concentration of plant juices, Clevenger found that acidity is influenced by a number of factors, such as time of day, stage of growth, portion of plant tested, illumination, temperature, etc. Acids were found to accumulate during the night to be destroyed

in the day. Dixon and Atkins found the concentration of the sap of plants varied with seasons and at different levels of the same plant. In the maple, sugars are present in maximum amounts in early spring and at 10 meters from the ground the percentage was 5.5 in February and in the roots 1 per cent. In October the percentages were 0.5 and 0.6 per cent, respectively. No great differences were noted in the amount of sugars in evergreen trees, either at different heights or during different seasons. Gurjar claims the relative proportion of carbohydrates and proteins in plants is dependent upon the nitrogen supply. Changes in the carbon-nitrogen ratio of plants is said to profoundly modify their metabolism. Respiration was found to vary directly and photosynthesis inversely with the carbon-nitrogen ratio.

Bokorny has brought together data regarding the nutrition of plants, and shown that a large number of organic compounds can supply the carbohydrate and protein nutrients of plants. Hepburn, and his associates, found in the pitchers of *Sarracenia* the proteolytic products formed from the digestion of insects are absorbed and utilized by the plants. It is thought probable that phosphates and other mineral materials are utilized in a like manner. Loeb, MacDougal, and others are continuing their studies of synthetic cells, colloid gels, etc., as contributing to the phenomena of permeability, imbibition, and growth. Loeb has shown that the mass of roots and shoots formed by sister leaves of *Bryophyllum* is in direct proportion to the mass of the leaves. He also considers gravity and inhibiting factors the forces which direct the regeneration of *Bryophyllum*. Coupin, from a study of etiolated plants concludes that chloroplasts in the presence of light produce a substance that has a retarding effect on growth. Illick, from a series of daily measurements of trees through several years, found their growth was twice as great at night as in the day and that the annual growth of white pine, spruce, etc., in Pennsylvania is completed early in July.

The rôle of vitamins in plant growth has been investigated by Willaman and it was found that two vitamins are necessary for the growth and sporulation of *Soleoortinia cinerea*. Budington claims that constituents in the thyroid glands influence protoplasmic activity in plant as well as in animal cells. The growth of onion root tips was stimulated by adding thyroid material to culture media but potassium iodid in equivalent amounts did not do so. Pituitary and suprarenal substances had no effect on growth. Baines has announced a new theory regarding electrical systems of plants. He claims that every plant, fruit, tuber, and seed is an electrical cell that cannot be polarized or discharged so long as it remains structurally complete. The skin, or rind, of fruits and vegetables serves as an insulating material for the conservation of electrical energy. In general the edible portion of plants is electrically positive. Growth, he claims, may be stimulated by a continuous current of low potentiality and proper sign.

Pickering has given additional data showing the injurious effect of plants on each other when grown together or in succession in cultures. No toxic exudation from the roots has been found. The toxic element is not corrected by lime but it is quickly oxidized. In his experiments, the grassing over of orchards was fol-

lowed within two years by a reduction of more than 50 per cent in the yield of fruit. Panatelli claims that resistance to cold by plants is due to the proportion of sugar retained within the cells during refrigeration and not to an accumulation of acids or salts. He considers sugar a source of energy for respiration or it may act to protect protoplasm against proteolysis or ultimate autodigestion. Ackerman has drawn a similar conclusion regarding frost resistance of wheat. According to his observations the higher the sugar content the greater the resistance to cold.

Beijerinck claims that free bacteria do not fix nitrogen and he presents the hypothesis that *Bacillus radicicola* is only indirectly concerned in the assimilation of free nitrogen of the air, and that the fixation is due to the protoplasm of the host plant acting as a catalyst.

PLANT BREEDING. Miss E. R. Saunders in the presidential address of the Botanical Section of the British Association for the Advancement of Science, summarized our knowledge regarding the processes of heredity and calls for more work by cytologists for the elucidation of the intricate problems involved in breeding. Roberts has performed a service to plant breeders in giving much data regarding forgotten facts relating to early investigations on the crossing of plants. East claims that Lotzy's theory of evolution, through hybridism, is open to criticism. East believes that the F₁ generation, arising from partially sterile inter-species hybrids, would furnish the variability required for evolution under domestication but he claims that evolution under domestication must not be confused with natural evolution.

Conklin concludes that Mendel's Law is of universal application so far as the segregation of inheritance factors is concerned, and that there may be no other type of inheritance. The mechanism of inheritance, he claims, is to be found in the germ cells and he believes the evidence points to the localization in the genes in the chromosomes. On the other hand, Yves Delage criticizes Mendelism and while admitting great advance has been made in understanding some of the phenomena of breeding he predicts the downfall of Mendelism from the weight of the accessory hypotheses that have been offered to explain special cases. DeVries has given additional evidence of mutation in *Oenothera*. He claims *Oenothera lamarckiana simplex* is a homozygous mutant and is not the result of the crossing of any earlier forms.

The occurrence of so many apparent mutants in plants and animals has caused many investigators to believe that many inherited differences have appeared in this way. DeVries has called attention to the loss of a factor that has to do with the production of green coloring matter in seedlings of certain plants that results in their early death. This tendency is apparently inherited in typical Mendelian ratios. Winge claims that variegation in plants is inherited but in a non-Mendelian manner. Bateson considers variegation in *Enonymus* to be a recessive character. Collins and Kempton have described a fine striping of the leaves of maize and claim the striping is inherited as a recessive Mendelian character. Stout, from a study of hermaphroditism in plants found reciprocal crosses may give opposite results.

Salaman and Lesley have described prostrate

and decumbent stemmed varieties of potatoes that have appeared in their breeding experiments. The varieties are reproduced through the planting of their tubers, are productive and are considered especially valuable on account of their ability to withstand drought. The common belief of breeders that degeneration begins in a variety as soon as selection ceases has been shown true for peas by Bateson and Pellew. The presence of rogues in any series present plants that never breed true to type. Hayes, from a study of several generations of wheat hybrids, concludes it is possible to produce varieties of wheat resistant to the black stem rust, *Puccinia graminis*. Plant breeding for resistance or immunity to disease is being given a large amount of attention on account of its practical importance. Reports have been made of varieties of wheat resistant to rust, potatoes to black wart and rot, flax to wilt, eggplant and tomatoes to bacterial diseases, hops to mildew, etc.

PLANT DISEASES.—The important rôle which plant diseases play in the United States may be recognized in that Congress appropriated more than a million dollars to the Department of Agriculture for the study of diseases and their control or exclusion. In addition the various agricultural experiment stations of the country reported investigations in progress on more than 300 plant disease projects. The Plant Disease Survey of the U. S. Department of Agriculture reports very great reductions in crop yields in 1919 due to plant diseases. Among the reductions reported as due to these causes are: wheat, 192,275,000 bushels; corn, 200,060,000; oats, 78,353,000; potatoes, 86,997,000; tomatoes, 207,168,000; apples, 18,920,000; peaches, 7,028,000 bushels, and cotton, 1,742,000 bales.

According to Stevens the "take all" of wheat, reported as occurring in Illinois and Indiana in 1919, is not the disease known under that name in Europe, Australia, and elsewhere but is a disease due to a species of *Helminthosporium*. A similar disease was recently described in Minnesota by Mrs. L. J. Stakman. Kirby and Thomas report the presence in New York in July of the past year of what is probably the true take-all of wheat due to *Ophiobolus graminis*. The area where the disease was found was covered with gasoline and burned. The flag, or leaf smut, *Urocystis tritici*, reported in 1919 on wheat in Madison County, Ill., has spread during the year and about 2,500 acres were reported as infected. This area has been placed under quarantine and measures have been adopted to stamp out the disease if possible.

A nation-wide search was made in 1920 for the potato-wart disease, *Chrysophlyctis endobiotica*, and it was found in but nine counties in Pennsylvania and two localities in West Virginia, the total infested area being about 100 acres. Efforts are being made to prevent its spreading to new areas and to eradicate it where now present. Tests have shown that a number of standard varieties of potatoes are completely immune to the wart disease. The tomato has been found to be a host plant for the fungus and this fact must be recognized in rotation experiments for its elimination.

The white-pine blister rust, *Peridermium strobi*, first found attacking white pines in New England in 1915, has spread west through New York, Michigan and Wisconsin to Minnesota in-

volving nearly all the white pine areas of this continent. The attempts to eradicate the disease on the white pine have been abandoned to a large degree, and now efforts are being made to control it. The fungus spends part of its cycle on species of *Ribes* from which it passes to the pine. Preliminary results indicate the possibility of the control of the disease by removing all the currant and gooseberry bushes in the vicinity of pine trees and active coöperation has been established between the federal and state governments for the control of this serious disease. The citrus canker, *Pseudomonas citri*, which threatened the citrus industry in the southern states, has been practically eradicated from the greater portion of this region. A recent report of the Florida Plant Board shows at the end of September no new infestations and only seven infested properties in the State. This disease has been recently reported in the Northern Territory of Australia. In South Africa, where eradication by burning has been adopted, only three infested regions are now known to exist. The mosaic disease of sugar cane has been found to be present in most of the cane-growing regions of this country and in addition it attacks corn and many grasses. The disease appears to be infectious and Brandes has demonstrated that it can be carried by insects. The disease of potatoes usually called tip burn has been shown by Ball to be due to the potato aphid.

Weston has given a detailed account of his investigation of the downy mildew of maize due to *Sclerospora philippensis*. On account of the serious nature of this disease a quarantine has been established by which the introduction of corn from the Orient is restricted. Continued investigations show the wide distribution and economic importance of the root rots of corn and the scab of wheat due to *Gibberella saubinetii*. A nematode disease of wheat widely spread in Europe is reported by Byars as occurring in California, Virginia, West Virginia, Maryland, and Georgia.

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BOURCHIER, THOMAS DAVID. British newspaper correspondent, died at Sofia, Bulgaria, December 30. For many years he had been the Balkan correspondent of the London *Times*. He was the son of a justice of the peace in County Cork, Ireland; was educated at Trinity College, Dublin, and at Cambridge, winning high honors in both institutions; and taught for some years

at Eton. He became special correspondent of the *Times* in Rumania and Bulgaria in 1888 and thereafter represented that newspaper in southeastern Europe, where he acquired the confidence of most of the rulers and of the leading politicians. Having been at the university an excellent Greek scholar, he was particularly sympathetic with Greece, which he frequently visited. He wrote an important series of articles for the *Times* after the first Balkan war and was intimately associated with Bulgarian affairs during the greater part of his career. He aided the Cretans with his advice and helped to prepare the way for ultimate union with Greece. He probably had a more detailed knowledge of the affairs of southeastern Europe than any other writer for the press and he contributed extensively to the various periodicals.

BOURY, EUGÈNE AUBOURG DE. French zoölogist, died in France, April 17. He was born in 1857. He was a collector of mollusks of the genus *Scalaria* and during the last ten years of his life gathered an extraordinary variety of these rare shells for the Prais Museum of Natural History, raising the number of specimens from 300 to 3000. He published many papers on the subject.

BOWDEN, HENRY GEORGE (better known as Father SEBASTIAN BOWDEN). British Roman Catholic ecclesiastic, died in September. For many years he had been a member of the London Oratory. He was born in 1836; educated at Eton and at the Irish Catholic university in Dublin. He left the latter institution at the age of nineteen and entered the military service. After twelve years with his regiment and on staff duty he joined the London Oratory and in 1870 was ordained priest. His influence over the young was remarkable and the boys educated under his direction became in many instances valuable servants of the state and church. He was Superior of the Oratory from 1889 to 1902 and from 1903 to 1907.

BOWDOIN COLLEGE. An institution of the higher learning at Brunswick, Maine; founded in 1794. The enrollment for the fall of 1920 was 403, and there were 30 members in the faculty. The productive funds of the college amounted to \$2,648,392, and the income for the year was \$178,536. The Bowdoin Medical School enrolled 65 students and had 62 members on its teaching staff. The college library contained 122,000 volumes. Mortimer Phillips Mason, Ph.D., was added to the faculty as Professor of Philosophy, and Glenn Raymond Johnson, A.M., as Assistant Professor of Economics and Sociology. New courses were offered in philosophy, government, and the fine arts. A campaign for an alumni fund was inaugurated and more than \$100,000 was secured by the Yale plan. President Kenneth Charles Morton Sills, LL.D.

BOWLING. The twentieth annual tournament of the American Bowling Congress was held at Peoria, Ill., April 9. J. Shaw of Chicago won the individual championship with a score of 713. S. Mercurio of Cleveland was second with 702. The other winners were: Doubles, Rickson, and Krem of Chicago, with 1301; five-man team, Brucks No. 1 of Chicago, with 3096.

BOXING. The year 1920 was marked by an unprecedented boom in professional boxing. It witnessed the transfer of the world's middle-weight championship from Mike O'Dowd to

Johnny Wilson, the overthrow of Pete Herman, world's bantamweight champion, by Joe Lynch and the crowning of Georges Carpentier of France as world's light heavyweight champion at the expense of Battling Levinsky. Jack Dempsey twice successfully defended his world's heavyweight title first against Billy Miske at St. Paul, Minn., and again against Bill Brennan at Madison Square Garden, New York City. The showing made by the champion in his bout with Brennan was a great disappointment to his admirers who had confidently predicted that the challenger would not last three rounds. As it was it took Dempsey 12 rounds to batter Brennan into submission. The brave stand made by Brennan encouraged the hopes of the followers of Carpentier that the light heavyweight champion would have as good as an even chance with Dempsey when they meet in 1921.

The marvelous Benny Leonard again reigned supreme in the lightweight world, disposing of Joe Welling and Richie Mitchell in battles for the title.

The championships of the Amateur Athletic Union were held at Boston, Mass., April 5 and 6, the results of the final bouts being:

One hundred and eight pounds, A. J. DeVito, New York City, defeated William Cohen, New York City, three rounds; 115 pounds, James Hutchinson, Philadelphia, defeated Neal Brock, Cleveland, three rounds; 125 pounds, Tommy Murphy, Kansas City, Mo., defeated B. Ponteau, New York City, three rounds; 145 pounds, Jack Schoendoerf, Milwaukee, defeated Roy Helton, Kansas City, Mo., four rounds; 158 pounds, Sam Lagonia, New York City, defeated Frank Grayber, Pittsburgh, three rounds; 175 pounds, John Burke, Pittsburgh, defeated Edward Eagan, New Haven, three rounds; heavyweight, Karl Wicks, Dorchester, defeated Joe Geroux, Boston, one round.

BOYS' AND GIRLS' CLUB WORK. See AGRICULTURAL EXTENSION WORK.

BOY SCOUTS OF AMERICA. The Boy Scouts of America was incorporated Feb. 8, 1910, and chartered by Act of Congress, June 15, 1916. The organization numbered, December, 1920, 382,936 Boy Scouts and 113,276 adult leaders, including local council and troop committee members, scout executives and commissioners, scoutmasters and their assistants. Boy Scouts are organized in patrols, of eight boys each, four patrols to a troop. Every troop must be chartered and rechartered annually by the National Council of the Boy Scouts of America. Each troop is under the direct leadership of a scoutmaster and one or more assistants, all of whom must be commissioned by the National Council. Assistant scoutmasters must be at least 18 years of age, and are usually young men who have passed through the ranks of Scouting and are consequently especially well fitted to aid in the training of the troop in Scouting activities. The scoutmaster must be at least 21 years of age and be an American citizen (or have declared intention to become such). All Scout leaders are men of proved moral worth and interest in boys and such as are willing to subscribe to the Scout Oath and Laws.

The purpose of the Scout movement as set forth in the Constitution of the National Council, Boy Scouts of America, is as follows: "To promote thorough organization, and coöperation with other agencies, the ability of boys to do

things for themselves and others, to train them in scoutcraft, and to teach them patriotism, courage, self-reliance, and kindred virtues, using the methods which are now in common use by Boy Scouts, by placing emphasis upon the Scout Oath and Law for character development, citizenship training and physical fitness." The Boy Scout programme is endorsed by leading educators, statesmen, clergymen, and public men generally throughout the country. It is a practical solution of the leisure hour problem, providing as it does, a wholesale, appealing plan of outdoor activities such as every boy enjoys as a scheme of recreation. It serves as a vigorous incentive to all round development, physical, mental and moral. The programme includes training in campcraft, knot-tying, first aid, signaling, public and personal health, nature study, trailing and tracking as well as a large field of specialized merit badge subjects, as for instance, photography, gardening, chemistry, bird study, forestry, sculpture, automobiling, firemanship, wireless and a host of others, all of which may well prove fascinating and worth-while boy hobbies, and even lead to definite vocational trails.

During the year 1920, 72,805 merit badges were awarded to Scouts, 1564 qualified for Life Scout rank, 1564 for Star Scout, and 586 for Eagle Scout rank. Scouts are according to their state of advancement classified as tenderfoot, second or first class scouts. First class scouts are eligible to merit badge awards and may qualify for the advanced rank of Life, Star or Eagle Scout. Scouts who have been active in the movement for five years or more are eligible to membership in the Veteran Scout Association.

The chief objectives of the Scout programme are the training of character and the making of good citizens. *Be Prepared* is the Scout Motto and service is the great ideal of the movement. Scouts are pledged to "be helpful to all people at all times," to do a "good turn" daily and to be ready for service, in any capacity, great or small, to the community and to the nation, the church, and school and the home. The phases of the scout coöperation in community activities are legion. They participate in the city clean-up, "walk-rite," and anti-fly campaigns, work with the police and fire departments, with health officers, park commissioners, and forest and game wardens. They coöperate with the Red Cross, the Y. M. C. A., Knights of Columbus, Salvation Army and kindred organizations. In fact they stand ready to give their services freely and efficiently to whatever good cause can use their organization for service. Scouts are trained in first aid, fire prevention and life saving. During the year 1920, two gold medals, 13 silver medals, 77 bronze medals, and 57 letters of commendation were awarded by the National Court of Honor, Boy Scouts of America, to Boy Scouts for conspicuous acts of courage and efficiency in the saving of life, at the risk of their own.

In 1920 (Feb. 8-14), the movement celebrated its Decennial with an appropriate coast to coast programme which included special emphasis upon the "Good Turn." Other outstanding events of the year 1920, were the "Birthday dinner," in honor of Daniel Carter Beard, National Scout Commissioner and dean of Scouting in America, held February 4 at the Hotel Commodore, New York City; the Tenth Annual meeting of the National Council, B. S. A., held in New York

City, March 25, 26, with members present from all over the Union and the first bi-ennial conference of Scout Executives held at Bear Mountain in September.

Perhaps the most noteworthy event in the 1920 history of the Boy Scouts of America was their participation, through a picked group of Scouts and leaders, over 360 in number, in the first International Boy Scouts Jamboree held at Olympia, England, July 31 to August 7, a meeting in which Scout representatives of twenty-three nations came together. The Boy Scouts of the delegation from the United States represented over 200 American communities and were under the leadership of Colonel L. R. Gignilliat of the Culver Military Academy. After the "Jamboree" closed the Scout delegation went to France for a brief educational visit including a tour of the battlefields of Northern France and a Scout gathering in Belgium at which King Albert received the Scouts. An international conference of Scout leaders was held in London, August 20-30, with President Livingstone, Vice-President Mortimer Schiff, Chief Scout Executive James E. West, and Messrs. John M. Phillips and Bolton-Smith, Executive Board members, as the official representatives of the Boy Scouts of America. It is of interest also to note that Mr. Lorne W. Barclay, Director of the Department of Education, Boy Scouts of America, was loaned by the National Council at the request of the American Committee for Devastated France, to conduct a Boy Scout Camp at Compiègne, France, during the summer of 1920, to help French Scouts by giving them the benefit of the American programme, system and equipment.

The Honorary President is the Hon. Woodrow Wilson, the Honorary Vice-Presidents are the Hon. William H. Taft, the Hon. William G. McAdoo and Daniel Carter Beard. The active officers are: President, Colin H. Livingstone, Washington, D. C.; vice-Presidents, Mortimer L. Schiff, New York City; Milton A. McRae, Detroit, Mich.; Benjamin L. Dulaney, Bristol, Tenn.; Arthur Letts, Los Angeles, Cal.; Robert J. Thorne, Chicago, Ill.; National Scout Commissioner, Daniel Carter Beard, Flushing, L. I.; Treasurer, George D. Pratt, New York City; Chief Scout Executive, James E. West, New York City.

The National Headquarters of the organization are at 200 Fifth Avenue, New York City, N. Y.

BRADY, CYRUS TOWNSEND. Clergyman and novelist, died at Yonkers, N. Y., January 24. His many novels were among the most popular of their time. He was born at Allegheny, Dec. 20, 1861; graduated at Annapolis in 1883, and was for several years employed on railroads in the West. He studied theology and was ordained priest in the Protestant Episcopal Church in 1890. He was rector of churches in Missouri and Colorado; was deacon in Kansas until 1895; in Pennsylvania, till 1899; then rector of churches in Ohio, Missouri, Mt. Vernon, N. Y., and from 1914 to the time of his death was assistant minister in St. Stephen's Church, New York. He served as chaplain in the Spanish-American War. After 1899, he applied himself to writing and published books at short intervals. The list which is too long to be repeated here, covered a great variety of subjects, including historical narratives, recollections of experience

in church work, sketches of various battles and historical episodes, military leaders, Indian fighters, etc., and comprising especially, a series of extremely popular stories of adventure. Among his later books may be mentioned: *My Lady's Slipper* (1905); *The Love Test* (1908); *Adventures of Lady Susan* (1909); *The Better Man* (1910); *As the Sparks Fly Upward* (1911); *Chalice of Courage* (1912); the "Dash-away" series of novels; *The Fetters of Freedom* (1913); *Little Angel of Canyon Creek* (1914); *A Baby of the Frontier* (1915); *The More Excellent Way* (1916); *By the World Forgot* (1917); and *A Little Book of Christmas*, (1917).

BRADLEY, THOMAS W. Former Congressman, died at Walden, N. Y., May 30. He was born April 6, 1844, served during the Civil War with distinction, and was wounded in the battles of Gettysburg, the Wilderness and Petersburg. He became a member of the New York Assembly in 1876 and was delegate to the Republican National Conventions from 1892 to 1908, with the exception of 1904. He was member of Congress from New York from 1903 to 1913.

BRANDT, HERMANN CARL GEORGE. College professor, died at Utica, N. Y., December 20. From 1883 he was a professor of German at Hamilton College. He was born in Vilsen, Germany in 1850; came to the United States in 1867; graduated at Hamilton College in 1872; and studied at the University of Göttingen, Strasburg and Freiburg. In 1874, he became instructor at Hamilton College, and from 1876 to 1882 he was associate-professor of German at Johns Hopkins. He wrote a number of textbooks for schools and colleges.

BRASHEAR, JOHN ALFRED. Celebrated telescope builder, and manufacturer of scientific instruments, died April 8. He was born at Brownsville, Pa., in 1840 and became a machinist and later an engineer. In 1870 he undertook the manufacture of astronomical instruments and was actively engaged in that work after 1880. From 1898 to 1900 he was acting director of the Allegheny Observatory. He was a member of the leading scientific bodies throughout the world within his sphere of interest.

BRAZIL, UNITED STATES OF. A Federal republic of South America, the largest state on the continent. The capital and largest city is Rio de Janeiro.

AREA AND POPULATION. The area has been officially estimated at 3,280,900 square miles or an excess of more than 250,000 square miles over the area of continental United States, exclusive of Alaska area, according to another estimate, 3,275,510 square miles. It comprises twenty states, a federal district and one territory. The population according to the census of 1900, was 17,318,556 (another estimate, 17,371,069), and according to the estimates of 1917, 30,492,275, or an average density in 1917 of 8.3 per square mile. The number of Indians in the Amazon area is placed at 600,000. The chief cities with their estimates of population in 1913 are as follows: Rio de Janeiro, 975,818; São Paulo, 450,000; Bahia, 348,130; Belem, 275,167; Pernambuco, 216,484. From 1820 to 1917 the immigration amounted to 3,428,651, of which in late years the chief element has been Italian. In 1919 immigrants numbered 57,101 as compared with 27,752 in 1918.

PRODUCTION AND INDUSTRY. The main occu-

pations are agricultural, but only a small part of the soil is under cultivation. By far the chief article of commerce is coffee. The single state of São Paulo produces about one-half the world's crop and along with Rio de Janeiro, Espírito Santo and Minas Geraes produces about four-fifths of the world's crop. In 1919-20 the product was estimated at 3,818,750 bags. Rubber is grown chiefly in the forests of the Amazon and around Para, Ceara and Manaos. It is also one of the chief products; others are tobacco, sugar, cotton, cereals, and vegetables. In 1920 the cultivation of hemp was becoming an important industry and the government was taking measures to encourage the cultivation of cotton. For many years the fibre plants of Brazil have been exploited. Chief among these is the piassava, of which there are several species and which has figured latterly to an increasing extent in Brazilian exports to the United States. It grows wild and no cultivation is necessary. Others of value are the piteira, armania, papoula,

Vinegar	419
Candles	152
Canes	33
Textiles	338
Corsets	80
Wall paper	7
Playing cards	7
Hats	690
Disks for graphophones	3
Table china and glassware	18
Hardware	29
Total	26,493

COMMERCE. There was a great development of commerce during the war and exportation for the first time of a number of products including rice, chilled meats and corn, and cassava meal. In 1919 the exports amounted to 1,907,688 tons valued at 2,178,719 paper contos and imports to 2,779,625 tons valued at 1,334,358 contos, which made the largest total of the last two years. The following table taken from the *Statesman's Year Book* of 1920 shows the chief exports in 1919 and 1918.

	Quantities 1919	Quantities 1918	Value 1919	Value 1918
Coffee (sacks)	12,963,000	7,433,000	272,607,000	219,041,000
Rubber (metric tons)	33,252	22,662	6,240,000	3,998,000
Tobacco	43,280	29,755	4,357,000	2,263,000
Sugar	69,429	115,634	3,714,000	5,459,000
Yerba Maté	90,200	72,781	3,201,000	2,151,000
Cocoa	62,584	41,865	5,602,000	2,158,000
Cotton	12,158	2,594	2,437,000	524,000
Leather	56,790	45,584	6,027,000	3,991,000
Hides	5,166	2,215	3,072,000	669,000

sida, and gravata. The coffee crop for 1919-20 was estimated at 3,818,750 sacks. The number of factories in Brazil has been estimated at 11,335, with 151,841 employees and the annual output at 741,536,000 milreis in 1918; cotton factories numbered 202 with 78,186 employees; and in 1916 there were 2036 tobacco factories. See AGRICULTURAL EXPERIMENT STATIONS.

According to statistics recently compiled by the National Treasury for the purpose of levying a consumption tax, there were 26,493 manufacturing establishments in Brazil in 1916, classified as follows:

Tobacco products	2,036
Beverages	13,577
Matches	29
Salt	1,005
Shoes	5,993
Perfumery	475
Pharmaceutical specialties	945
Preserves	657

The United States was the country of destination in 1910 for the following Brazilian exports: Coffee, cacao, sugar, rubber, carnauba wax. In 1918 the countries of destination were in order of importance, the United States, Argentina, Italy, Uruguay, the United Kingdom, and France, the United States receiving more than twice as much as any other country.

COMMERCE. The foreign trade of Brazil was valued at \$531,626,150 in 1918 as against \$493,548,180 in 1917, showing an increase of \$38,077,970 for the year under review. Imports during 1918 were worth \$247,351,150 and during 1917, \$209,434,487. The import trade of Brazil has shown a consistent development since 1914, with the exception of 1915. Trade, however, has not attained the value reached in 1913, \$326,025,511.

Imports into Brazil for the six years, 1913 to 1918 inclusive, are given in the appended table by countries of origin:

Countries	1913	1914	1915	1916	1917	1918
United States	\$51,226,362	\$30,075,029	\$46,968,238	\$76,238,664	\$98,722,602	\$88,982,702
Great Britain	79,782,389	39,698,493	31,886,695	39,667,499	37,713,580	50,469,450
Germany	56,973,330	25,734,821	2,202,507	86,186	227,872	...
France	31,900,321	12,875,209	7,205,798	10,117,764	8,456,017	11,836,983
Argentina	24,263,720	15,880,369	23,143,815	27,364,520	27,326,441	46,974,712
Portugal	14,309,878	8,596,099	7,219,814	9,049,044	6,810,544	9,490,672
Belgium	16,658,908	4,539,556	251,014	277,735	102,192	...
Italy	12,350,550	6,813,775	6,382,041	6,792,656	4,152,127	5,263,450
Uruguay	7,038,766	2,514,895	2,147,748	2,894,720	4,048,285	10,316,444
Austria-Hungary	4,921,688	1,625,601	189,821	1,510	404	...
Switzerland	8,839,604	2,068,412	1,551,623	2,469,489	1,659,694	1,906,156
India	2,676,416	1,788,501	2,707,329	3,155,973	4,563,523	3,087,133
Newfoundland	3,820,008	3,345,392	3,093,329	3,355,192	3,572,776	5,927,204
Spain	3,112,636	1,677,091	2,107,927	2,261,232	2,826,369	4,371,617
Norway	3,427,848	2,711,507	2,406,520	1,984,393	1,713,539	1,060,729
Netherlands	3,532,512	1,417,711	998,480	1,159,488	216,209	293,850
Sweden	1,427,924	808,596	1,283,138	2,525,821	1,867,948	2,349,450
Canada	1,329,767	817,660	1,194,186	1,320,891	1,132,831	1,025,421
Denmark	571,258	356,399	638,721	1,102,938	382,244	195,391
Russia	369,109	191,360	60,146	76,536	67,162	1,148
Chile	404,351	218,970	97,708	56,950	1,028,084	358,849
China	164,853	140,094	169,472	257,904	18,036	158,612
United States possessions ..	...	...	...	44,395	51,396	...

Countries	1913	1914	1915	1916	1917	1918
Other British possessions ..	214,398	867,417	260,208	255,257	591,011	11,301
Paraguay	356,374	175,622	323,860	201,733	306,880	46,958
Japan	174,418	46,730	52,483	112,096	339,699	1,588,927
Greece	71,244	8,434	15,751	84,209	1,869	22,312
Turkey in Europe	63,948	54,935	17,713	12,453	12,177	112
Turkey in Asia	54,037	35,450	3,439	3,802	2,660	84
Cuba	30,937	25,857	172	20,761	15,843	27,137
Peru	11,176	3,005	14,281	21,534	7,722	6,900
New Zealand	40,199	34,457	103,063	30,022	163,991	.....
Mexico .....	.....	.....	.....	1,255,576	919,016	1,609,785
All other countries	906,587	804,241	1,051,984	373,200	413,654	25,661
Total	326,025,511	165,746,688	145,749,024	194,582,158	209,434,487	247,351,150

The following table gives the export returns according to countries of destination from 1913 to 1918:

Countries	1913	1914	1915	1916	1917	1918
United States	\$102,436,302	\$92,095,944	\$106,965,884	\$124,897,986	\$130,987,909	\$98,474,000
Great Britain	41,650,331	31,858,200	30,908,703	31,062,507	35,817,290	28,702,500
Germany	44,333,640	20,514,586	99	.....	.....	.....
France	38,637,801	17,976,842	29,125,296	42,810,577	39,272,267	25,604,000
Netherlands	23,223,993	12,925,234	15,987,995	8,103,148	1,496,946	609,000
Austria-Hungary	15,187,242	4,496,811	.....	.....	.....	.....
Argentina	14,830,127	10,626,685	12,938,632	16,125,837	25,658,954	43,188,250
Belgium	8,038,429	3,299,367	.....	.....	.....	1,440,000
Uruguay	5,160,203	3,778,918	4,415,771	7,099,898	13,140,747	29,626,000
Italy	4,062,253	7,045,062	8,031,526	16,344,577	22,950,693	30,249,750
Sweden	3,190,292	5,428,552	23,161,167	7,506,215	382,201	1,386,250
Spain	1,807,307	1,258,462	1,304,411	2,185,560	3,921,385	13,552,250
Turkey	2,004,583	475,423	13,362	.....	.....	.....
Portugal	1,587,099	1,950,987	2,309,937	1,500,166	1,310,838	2,602,500
All other countries	7,478,476	9,802,956	20,496,043	8,165,340	9,179,463	8,840,500
Total	813,628,078	221,539,029	255,658,826	265,801,811	284,113,693	284,275,000

FINANCE. A unit of currency is the real, but the common denomination is the milreis, consisting of over a thousand reis. A conto equals 1,000 milreis. In 1920, the revenue was estimated at 119,452,949 gold milreis and 514,258,200 paper milreis; the expenditure at 72,372,326 gold milreis, and 599,578,557 paper milreis.

RAILWAYS. Of the total mileage, 18,662 opened for traffic Jan. 1, 1918; 9455 belonged to the central government; 6231 to private companies; and 1527 to the States, the chief owners among the states being São Paulo, and Minas Geraes. The principal railway is the Central Railway owned by the Federal government, with a mileage of 1466. On January 12, the government appropriated 50,000,000 milreis for maintenance and improvements. The railway system is connected with that of Argentina, Paraguay and Uruguay.

During the year the Commission of Finance of the Federal Congress of Brazil approved the proposal of Sampaio Correa regarding the electrification of some lines of the Estrada Ferro Central do Brazil, a government-owned railroad. By unanimous resolution the executive committee was authorized to open a credit of about \$11,000,000 to cover the cost of changing the railroad system from steam to electricity on the suburban lines from the central station in Rio de Janeiro to the following stations: Deodoro, Barra do Pirahy, Santa Cruz, Paracamby and Maritima. The executive committee also ordered the preparation of plans for the prolongation of some or all lines to the center of the city, if possible to the Praça Mauá, having authorized the opening of the necessary credit, should the project be approved by the prefect of the federal district.

POSTS AND TELEGRAPHS. In 1910 the post offices numbered 3,642 and the telegraphs had 54,463 miles of line. The government controlled 45,047 miles.

GOVERNMENT. The executive authority is vested in the president, elected directly by the people for four years and not eligible for re-

election. Along with him the vice-president is chosen. The legislative power resides in a national congress consisting of the chamber of deputies and the senate. The former has 212 members elected by direct vote for three years and the latter 63 members elected for nine years, of whom one-third are renewable every three years. The president, Dr. Epitacio da Silva Pessoa was elected April 13, 1918, for the remainder of the period 1918-1922. The vice-president in the first part of the year was Dr. Delphim Moreira (q.v.) who died, July 1.

The ministry was chosen by President Pessoa, as follows: Homero Baptista (Finance), Azevedo Marques (Foreign Affairs), Alfred Pinto (Interior and Justice), José Pires do Rio (Transportation and Public Works), Raul Soares de Moura (Marine) João Pandia Calogeras (War), and Simeos Lopez (Agriculture).

HISTORY. The president's message dealt with the reorganization of the departments of state, including the establishment of a ministry of instruction, public health, and with the reclamation project of the northeast. On May 3, a new tariff bill was proposed, providing for reduction of duties on articles of prime necessity. A strike of railway-men in March was followed by a general strike which checked the movement of industry for a month. In 1920, the king of Belgium paid a visit to Brazil, where he was received with great enthusiasm, being the first European sovereign to visit a South American country. He arrived at Rio de Janeiro on a Brazilian dreadnought on September 19 and made a tour of the Brazilian states early in October. The Senate passed a bill conferring upon him the title of citizen and making him a marshal of the army. His visit was the occasion of a new commercial and financial agreement between Brazil and Belgium. The former prime minister of Italy, Orlando, arrived at the capital as ambassador to Brazil, October 20.

At that time there was a difficulty which required adjustment arising from the seizure by D'Annunzio of a Brazilian steamship at the port of Fiume. Brazil was concerned over the question of immigration, and as the settlement of the country was not proceeding rapidly enough, measures were taken for facilitating the entry of Jews from the Ukraine in November and for settling them on the public lands. The Italian ambassador, Orlando, was taking measures to protect Italian immigrants, who were next to the Portuguese, the most numerous element in the immigration. See **NAVAL PROGRESS**.

BREAD. See **FOOD AND NUTRITION**.

BRECK, GEORGE WILLIAM. American mural painter, died at Flushing, L. I., November 21. From 1904 to 1909 he had been the director of the Academy of Fine Arts in Rome. He was born at Washington, D. C., Sept. 1, 1863; studied at the Art Students' League in New York and won a scholarship for the study of mural painting. After that he studied at the Academy of Fine Arts in Rome. After 1910 he remained in New York. Among his mural decorations are those of the University of Virginia; Saint Paul's Church at Rome; the Watertown Public Library. He won a silver medal at the St. Louis exposition in 1904.

BRECKINRIDGE, MADELINE McDOWELL (Mrs. DESHA). Woman suffragist, died at Lexington, Ky., February 25. She was born at Woodlake, Ky., May 20, 1872, and in the latter half of her life was very prominent in all suffrage activities, being president of the Kentucky Equal Rights Association, 1912-15, and again in 1919. She was also active in many philanthropic and public welfare movements, including child labor, tuberculosis, charities, nursing, etc., and did much toward promoting legislation for improvement in these fields. She was vice-president of the National Woman's Association, 1913-14 and president of the Lexington Civic League.

BREEDING. See **LIVESTOCK**.

BREEDING PLANTS. See **BOTANY**.

BRETHREN, CHURCH OF THE. Organized at Schwarzenau, Germany, in 1708, this denomination is commonly known as Dunkers. It comprises a membership of about 100,000, with more than 1000 churches and 3300 ministers. Missions are maintained in India, China, Denmark, and Sweden. During the year two representatives of the church were making a tour of inspection of the present missions and contemplating a visit to Africa with the idea of establishing a mission on that continent in the near future. The famine which occurred in certain sections of China during the latter part of 1920 was very severe in the Church of the Brethren territory. The Home Board of Missions called upon the Brotherhood for a large offering to relieve suffering in that land. In order to co-ordinate the work of the various church boards, the "Forward Movement Organization" was established. One person selected from each board and general committee in the church constitutes the Executive Committee. This committee meets quarterly for the promotion and coördination of the general church work. The Annual General Conference of the church was held at Sedalia, Mo., in June. At that time an offering of \$700,000 was pledged for mission and production work. Ten colleges are maintained, having in 1920 a total enrollment of about 2500. Sunday Schools numbered about 1300 with a

total enrollment of about 124,000 pupils and 13,000 teachers and officers. The headquarters of the various church boards are in Elgin, Ill., including the General Mission Board, General Educational Board, General Sunday School Board, General Christian Workers' Board, Temperance Board, General Relief Committee, and the Peace Committee. The publishing house is at Elgin, Ill., and the organ of the church is known as the *Gospel Messenger*.

BREX, TWEELS. London journalist, died in 1920. He wrote essays of a light character whose value was discovered by Lord Northcliffe who made him a contributor to the *Daily Mail*. During the last six years of his life he wrote continuously for that newspaper and his articles were widely read. A biography was published in 1920 by a friend and colleague, Mr. Hamilton Fyfe, under the title of *Tweels Brex—A Conqueror of Death*.

BRIDGES. In 1920 general bridge design and construction figured more prominently than in previous years, and this was also true for the consideration of a number of important projects whose realization was, in the nature of events, problematical. In the United States the return of the railways to their owners from government control had led to the earnest consideration of necessary improvements and replacements which the increased weight of rolling stock, or on some of the larger lines increased traffic, often had rendered necessary. The revival of interest on the part of American railways in bridge building was of itself important, for much of the most important design and construction always had been in this field. Furthermore with the increased use of motor trucks on highways, bridges of increased strength were required at many crossings. Finally there were discussed during the year a number of very important plans whose realization would have an important bearing on terminal conditions or on methods of access to great cities. Naturally as these had not been constructed it was easy to find an explanation in the magnitude or engineering difficulties of the work. Therefore, when great structures were proposed to cross the Hudson from Manhattan to New Jersey, the Delaware River at Philadelphia, and the Detroit River at Detroit, and engineers were engaged in preparing plans for such works, it can be appreciated that this field of engineering was fairly active. Such plans while not consummated during the year were destined, when prepared, to attract considerable attention as with the more modern steels and increased knowledge certain modifications in designs and weights of structures, over those of earlier builders could be attempted.

In Europe, beyond repair work and reconstruction due to the war, not much in the way of progress was recorded. In China certain new bridges were proposed, but here as elsewhere, high costs and financial conditions had to be considered. In the following paragraphs a few of the more notable bridges proposed or under construction during the year are outlined:

PROPOSED HUDSON RIVER BRIDGE AT NEW YORK. Manhattan Island separated as it is from New Jersey where all but one of the leading trunk lines terminate, occupies a certain isolation which involves many commercial disadvantages. Accordingly in 1920 various measures such as tunnels (See **TUNNELS**) and bridges were under way or being discussed to remedy

this condition. One of the proposed projects was that of a massive suspension bridge located at or below 59th Street, Manhattan, and crossing to the New Jersey shore, beginning with its approach at Ninth Avenue, New York City, and terminating on the top of the Palisades, a distance of approximately 10,000 feet or the same as the vehicular tunnel whose construction was begun during the year. This plan was proposed by Gustav Lindenthal, the bridge engineer responsible for many notable American structures, and was discussed by him in a paper before the annual meeting of the American Society of Mechanical Engineers at New York Dec. 8, 1920. Mr. Lindenthal's plan provided for a bridge with two decks, 180 feet wide, the lower deck accommodating eight railroad tracks, and two tracks for a moving platform, and the upper deck providing for highway and local traffic, four lines of rail, 12 lines for vehicles and two sidewalks. The eight railroad tracks would connect with a two-story elevated railroad on the West Side, with the New York Central tracks along the river front, and also with a union passenger station.

The total cost of the bridge, liberally estimated was \$100,000,000, or only about one-third to one-fourth the cost of 20 tunnels that would be required to afford equivalent freight and passenger accommodation between New York and New Jersey.

Furthermore, such a bridge it was claimed would contribute materially toward solving the very serious port difficulties which were embarrassing the growth or even the successful prosecution of New York commerce. Such a bridge would bring relief to seven railroad systems for the freight transfers across the river, exclusively done on floats, and aggregating on the average some 3000 cars daily, with an annual growth of some 10 per cent.

In this connection it is possible to compare New York transportation facilities across the East River with those at the North River. While the commercial importance is far less, there were in 1920 four large municipal bridges with 36 tracks for rail cars and 16 lines for vehicles in addition to 16 subway tunnels or 52 lines of traffic on a river front of about six miles. Furthermore two additional bridges and 16 subway tunnels were under discussion. On the North River there were but the Hudson Tubes, Pennsylvania Railroad Tunnels, and the Vehicular tunnels started in 1920.

DELAWARE RIVER BRIDGE. This important project advanced nearer realization on Sept. 23, 1920, when a board of three engineers to make a traffic, location and design survey and report on a highway bridge over the Delaware River at Philadelphia was appointed by the interstate bridge and tunnel commissions of New Jersey and Pennsylvania in joint session. The board was composed of Ralph Modjeski, consulting engineer, New York; George S. Webster, chief of the Bureau of Surveys, Philadelphia; and L. A. Ball, consulting engineer, New York. Mr. Ball, a resident of East Orange, N. J., was selected by the New Jersey authorities to represent that State.

For the survey report an appropriation of \$100,000 was made by the commissions, this sum including the fees of the board members. It was expected that the report will be completed within six or eight months. Three sites were

to be investigated, one located south of Market Street, the other two north of Market. Borings to disclose the foundation material, studies of property values and an estimate of the cost of the bridge were to be included in the report.

THE DETROIT-WINDSOR BRIDGE. The plans for a bridge over the Detroit River at Detroit, Mich., announced during 1920, contemplated a suspension bridge of 1770 feet clear span, carrying two 28-foot roadways, two 7-foot sidewalks, two street-car tracks and four railway tracks. The main span would be 100 to 110 feet clear of the water. Railroad approaches, on $1\frac{1}{2}$ per cent grades would be about a mile long. The estimated cost of the bridge was \$28,000,000. The cost of a highway bridge at the same location would be about \$11,500,000, making the cost to add the four railway tracks about \$16,500,000.

It was proposed to invite all the railroads shipping cars across the river to join the project on an equal basis, on the basis of calculations showing the cost per car to be not above the prevailing cost of ferrying. The number of railroad cars crossing the river in 1920 was estimated at 1,700,000 annually, and the projectors of the bridge calculated that the railways could safely guarantee the bridge 1,000,000 cars a year by 1925. The bridge was proposed as a measure of economy as the cost of tunnels with equal capacity was estimated at upwards of \$60,000,000.

The engineers decided in favor of the suspension bridge design on the basis of economy, safety of erection, aesthetics and the time in which the structure can be completed. The engineering investigation was conducted by Charles Evan Fowler, consulting engineer, New York City, while Gustav Lindenthal, New York City, was retained as consulting engineer. On December 28th the city council of Detroit decided to postpone indefinitely action on the bids for the construction of the Belle Isle Bridge, a second series of which were submitted. The alleged ground was that the structure could not be completed within the \$3,000,000 bond issue authorized by the votes in 1919.

CHICAGO BASCULE BRIDGE. In May, 1920 there was put in service at the Michigan Avenue Run crossing of the Chicago Run at Chicago, Ill., a new double-deck double-leaf fixed-counterweight trunnion bascule highway bridge of 256 feet span. This construction was designed for very severe service requirements and has highways at two levels in order to separate fast and slow traffic. The bridge is an important link in the widening and extension of Michigan Avenue between Randolph Street and Chicago Avenue, connecting the business district with the northside section of the city. There are viaduct approaches which at the ends of the bridge are widened to form extensive and ornamented plazas, and these connect with the upper roadway of the bridge, while the lower deck carries the slow and heavy commercial traffic from the various terminals, docks and industrial buildings in the neighborhood. A clear channel of 220 feet is provided by a span of 256 feet centre to centre of trunnions and there is head room of $16\frac{1}{2}$ feet for 80 per cent of the channel width with the bridge closed, and 120 feet for the entire width of the channel with the bridge open. Each leaf consists of four trusses, one advantage of which is that the bridge could be separated into two parallel parts in case of emergency. The two inner trusses are spaced 6 feet centre to centre, and the outer

trusses 27 feet. The upper deck has two 27-foot roadways between trusses and two 15-foot sidewalks on cantilever floor beams. The lower deck has two 18-foot roadways and two 6-foot sidewalks, all within the trusses. The overall width of the upper deck is 91 feet, 9 inches. Each leaf of the bridge is operated by two 100 horse power motors with two additional motors in reserve. The new Michigan Avenue bridge had an estimated daily motor car traffic of 30,000 and the lower deck had an estimated capacity of 6000 teams daily. The bridge weighs, both leaves included, about 13,400,000 pounds, with an average load on each of the eight trunnions of 1,675,000 pounds, very probably the heaviest double-leaf double-deck bridge in the world. There was also under construction in Chicago the new Willis Street bridge, weighing 9,600,000 pounds for both leaves and carrying on its upper deck elevated railway tracks. The Michigan Avenue bridge is described in some detail in *Engineering News-Record*, vol. LXXXV, no. 11, Sept. 9, 1920, page 508.

PROPOSED DESTRUCTION OF HIGH BRIDGE. High Bridge, New York City, a masonry arched structure built to carry the first Croton Aqueduct across the Harlem River into Manhattan Island, figured in engineering discussion during the year. The United States War Department in the interest of the river and harbor navigation demanded the removal of this historic structure as an obstruction of navigation and an obstacle to the channel development planned for the Harlem River. The government's demands would be met by the reconstruction of the bridge with larger channel openings and various plans to accomplish this end were proposed and discussed. High Bridge was designed by J. B. Jervis, a construction engineer in the building of the Erie Canal, the Croton Water Supply and the Hudson River R. R. and was considered of rare architectural beauty as well as having served a very useful function. For that reason the American Institute of Consulting Engineers and the New York Chapter of the American Institute of Architects proposed to retain its essential features in a reconstruction which would substitute a single 231-foot span of semi-elliptic form for three of the existing 80-foot arches. With this plan it would be possible to increase the width of the roadway so as to make it a much needed means of communication between Manhattan Island and the Bronx. This plan secured the approval of the United States Engineer Officers, but was opposed by the New York City Department of Plants and Structures which recommended the demolition of the masonry structure and the removal of the alternate piers, replacing the successive pairs of arches by steel plate girder spans masked by a masonry shell in the shape of a flat arch. At the end of 1920 no decision had been reached on the method of meeting the War Department's requirements.

PHILADELPHIA & READING BRIDGE AT HARRISBURG, PA. During the year the Philadelphia & Reading R. R. began the replacement of its wrought-iron deck truss bridge and through plate girder bridge across the Susquehanna River at Harrisburg, Pa., and over the Northern Central tracks with a double-track concrete structure. The project involved the dismantling of the long single-track structure referred to, the strengthening of the old piers, the building of new intermediate piers, and the erection of a

double-track reinforced concrete bridge with 40 arches approximately 76 feet from centre to centre of piers. In addition there will be considerable work done on several of the land bridges and viaducts forming a part of the approaches in the city proper. This work was being done on the Philadelphia, Harrisburg & Pittsburgh branch, which connects with the Lebanon Valley branch passing over the city streets and the Pennsylvania R. R. tracks.

As it was necessary to continue traffic over the older bridge during construction the arch rings were being built in two longitudinal sections. On the completion of the foundations the first section, 13 feet 6 inches wide, was to be built on the down-stream side of the existing bridge. In order to retain the stone fill supporting the track a middle wall of reinforced concrete 2 feet wide was to be built and anchored to the spandrel walls by $\frac{1}{4}$ -inch tie rods. When this section was completed traffic would be transferred to it, and then the old superstructure dismantled and the remaining section of arch rings completed.

This bridge is an important structure as the movement over it consists almost entirely of solid through trains of the Philadelphia & Reading, the Baltimore & Ohio, the Norfolk & Western, the Western Maryland and the Cumberland Valley. Some 75 trains are using the bridge daily, without counting switching movements, and the daily revenue tonnage averages about 140,000. The project is described in the *Railway Age*, p. 869, vol. LXIX, no. 21, Nov. 19, 1920.

OHIO RIVER BRIDGE. Late in the spring the Cincinnati Southern R. R. let a contract for the reconstruction of its Ohio River bridge. As early as 1916 the consulting engineer, Ralph Modjeski, had completed plans for a heavy new double-track structure and tenders were about to be called for, when the work was held up on account of the declaration of war. After the return of the railroads to private hands the leasing line, Cincinnati, New Orleans & Texas Pacific Ry. (Southern) made arrangements to proceed with the Ohio River work, and the contract for furnishing and erecting the superstructure was placed with the American Bridge Co.

On account of traffic and river conditions at Cincinnati the erection of the new double-track structure must proceed without interrupting service over the old spans and without the use of falsework in the river, except for the 300-foot span at the north shore and the lift span (which will replace the former draw span) at the south shore. Therefore two long spans remained to be erected by cantilevering, a 300-foot span built from the north shore span and a 519-foot span from the former and from the lift span. The new steel structure was to be erected on the old piers, the load being distributed by pier columns and pier girders, these supports being encased in a jacket of concrete after erection work is completed. Silicon steel was to be used in all main truss members. The old bridge required special light locomotives to haul trains to the Cincinnati terminus.

NEW B. & O. BRIDGE OVER ALLEGHENY RIVER An interesting and complicated bridge transfer was the replacement of the Allegheny River bridge of the Baltimore and Ohio R. R. at 33rd Street, Pittsburgh. This was successfully completed Dec. 20, 1920, by the employment of a series of rolling and jacking operations. The

new bridge is at a higher level than the old structure built in 1884, an increased head room of 8.4 feet and new spans lengthened to 434 feet and 261 feet, respectively, being required by the United States War Department. Various additions complicated this work and the solution finally reached was to erect and roll into position the new long span weighing 3200 tons a distance of 38½ feet and raising the 261-foot span, which weighed 1200 tons, from a temporary position, a height of 15 feet. Both these were curved Warren trussed spans riveted throughout without sub-panels. This construction and operation are described in the *Railway Age* for May 28 and Dec. 24, 1920.

NEWARK BAY BRIDGE OF THE JERSEY CENTRAL. The mile and a half long timber trestle of the Jersey Central over Newark Bay was being reconstructed under difficult traffic conditions during 1920, with ultimate plans to replace this low-level bridge with a four-track high line of steel and concrete. The reconstruction of the trestle was required by the recent acquisition of some heavy Mikado freight locomotives and involved placing a new deck on the existing bridge in order to bring the entire line up to the modern specifications of loading and speed.

The work was divided into eight independent operations, in each one of which a length of track was to be torn up and rebuilt, while trains in both directions ran around the abandoned section on a single track. A very serious undertaking for a road with so many commutation trains.

The construction of the new steel bridge was to be started as soon as necessary financial arrangements would permit. Such a high-level bridge would allow a large proportion of the harbor traffic to pass underneath without the operation of the draw span, and freedom from this delay, together with the additional tracks, will vastly increase the train-carrying capacity of the line.

BELLE ISLE BRIDGE, DETROIT. Detailed plans for the Belle Isle bridge, prepared by Esselstyn, Murphy and Hanford, engineers, during the year were adopted by the Detroit city council.

The bridge as planned was to be approximately 2200 feet long, with 20 spans 74 feet to 135 long. The total width was to be 88 feet, with 59-foot roadway (asphalt pavement) for six lines of traffic and two 12-foot sidewalks. There was to be no drawspan contemplated, but the structure was to afford an underclearance of 30 feet, sufficient for fire boats and pleasure vessels. The cost of the structure was estimated at \$2,000,000.

MISSOURI RIVER HIGHWAY BRIDGE AT BISMARCK, NO. DAK. Plans were completed in 1920 and contracts let for the Bismarck-Mandan highway bridge across the Missouri River at Bismarck, No. Dak., at a cost of nearly \$1,000,000, both bridge and highway being Federal Aid projects. The structure was designed to consist of three through riveted truss spans of 476 feet, and about 1000 feet of approach consisting of reinforced-concrete deck on wooden piles. The four river piers, spaced 481 feet on centres, required sinking to depths of 50 to 90 feet below low water, passing through sand and silt to a stratum of hard clay shown by borings. The open-excavation method of sinking was planned to be employed on this work, although air was to be used after the piers had been landed, to place the bottom and seal concrete. The two outer piers of the four consist of two 20-foot cir-

cular pedestals 35 feet apart on centres, joined by a connecting member at the top. The two middle piers are 22 x 65-foot rectangles.

SOUTHWARK BRIDGE, LONDON. During the year there was active progress on the reconstruction of the Southwark bridge over the Thames River in London. This famous old structure, built in 1819, consisted of three cast-iron arch spans, the central one of 240 feet and the others of 210 feet each. In each arch there were eight cast-iron ribs, connected by cross-frames and lateral bracing. The new structure erected in its place consists of five steel spans ranging from 123 to 140½ feet. The new project also increased the width of the deck from 42½ feet to 55 feet. (35-foot roadway, two 10-foot sidewalks). Pneumatic caissons were employed in the construction of the new piers, the largest being 30 x 102 feet; an air pressure of 22 pounds was required in sinking them. Differences in construction methods appear when it is stated that in place of 5000 tons of cast-iron in the old bridge, the new represents a total weight of steel of 2000 tons. The old structure is said to have cost £800,000.

In China during 1920 the Ministry of Communications asked for bids for the construction of a heavy modern railway bridge nearly two miles long to replace the existing Hwang-ho or Yellow River bridge of the Peking-Hankow Ry., a structure 9875 feet long. The bridge to be replaced was fabricated partly in Belgium and partly in France, and was formed of both through-truss and deck-girder spans, supported on screw piling, and is only 11 feet above water. The proposed work was to afford a bridge of much greater capacity which it was estimated would cost from \$15,000,000 to \$20,000,000.

BRIEUX, M. See FRENCH LITERATURE.

BRIGHT, JAMES FRANCK. British historian, died at Norfolk, England, October 23. From 1881 to 1906 he was master of University College, Oxford. He was born in London, May 9, 1832, and was educated at Rugby and University College, Oxford. After serving as master at Marlborough College, he became head of the modern department there, holding the position for 16 years; then returned to Oxford, where he became dean of University College in 1874. He played an important part in the development of modern language and history teaching and in connection with the latter began the *History of England*, which grew into a length far exceeding his original plan and became a widely known text. Among his other writings may be mentioned *The Lives of Maria Theresa*, and *Joseph II.*

BRITISH COLUMBIA. A maritime province of Canada on the Pacific Ocean, extending from Alberta to Alaska, with an area estimated in 1919 at 395,610 square miles, and with a population at the census of 1911, of 392,480; estimated in 1919 at about 400,000. The chief cities with their estimated populations in 1919 are Victoria, the capital, 60,000; Vancouver, 175,000; New Westminster, 16,000; Nanaimo, 10,000; North Vancouver, 13,000. The executive authority is vested in a lieutenant-governor, appointed by the Governor-General of the Dominion and acting through a responsible ministry or executive council, consisting of eight members; and the legislative power is vested in a legislative assembly of forty-seven members elected for four years by a universal adult suffrage. The Lieutenant-Governor at the beginning of 1920 was Sir Frank Barnard and the Prime Minister

was John Oliver. See CANADA and ANTHROPOLOGY.

BRITISH EAST AFRICA. The territory on the mainland of Africa comprising the East African protectorate, Uganda protectorate, and Zanzibar. See these articles.

BRITISH GUIANA. A British colony on the northeastern coast of South America, comprising the settlements of Demerara, Essequibe, and Berbice; bounded on the east by Dutch Guiana, on the south by Brazil, on the west by Venezuela, and on the north by the Atlantic Ocean; area (1911), 296,000; estimated Jan. 1, 1919, at 310,972. Many East Indians have immigrated for employment on the sugar estates and as agricultural laborers. By 1918 they numbered 73,557 but no immigration was reported in that year. Land under cultivation was placed at only 197,000 acres in 1919 and the leading products in respect to acreage were rice, sugar cane, and cocoanuts; the chief exports were sugar, rum, and rice; the chief imports were flour, machinery, textiles, and fertilizers. Statistics for commerce, finance, and shipping follow:

	1917	1918
Imports	£3,271,017	£3,835,826
Exports	4,315,939	3,524,798
Revenue	736,473	863,625
Expenditure	733,689	774,481
Shipping	682,906	598,187

BRITISH GUINEA. See PAPUA.

BRITISH HONDURAS. A British crown colony on the coast of Central America, south of Yucatan and 66 miles west of Jamaica; area 8592 square miles; population (1911) 40,458; estimated Jan. 1, 1919, 42,368. In 1918 the birth rate was 41.3 per thousand and the death rate 49.4. Only a small part of the land is cultivated. The chief sources of wealth are mahogany and other forest products. The chief imports of 1918 were gum, cotton and silk piece goods, flour, boots and shoes, and apparel. The chief exports were mahogany, cocoanuts, bananas, gum, and logwood. Statistics for two years follow:

	1917-18	1918-19
Imports	£574,850	£733,620
Exports	550,300	754,867
Revenue	139,141	148,402
Expenditure	138,937	138,012
Shipping *	686,987	.....

* Tonnage entered and cleared.

BRITISH INDIA. See INDIA, BRITISH.

BRITISH NEW GUINEA. See PAPUA.

BRITISH NORTH BORNEO. A British colony in the northern part of the island of Borneo under the jurisdiction of the British North Borneo Company and administered by a governor in North Borneo and a board of directors in London. The area is about 31,106 square miles; population (1911) 208,183, made up chiefly of Mohammedan settlers on the coast and native tribes in the interior. The Europeans in 1911 numbered only 353 and the number of natives has been roughly placed at about 170,000, the main element being the Dusuns. The main foreign element in 1911 was the Chinese who numbered about 26,000. Trade is with Great Britain and the colonies and for the most part through the ports of Singapore and Hongkong.

The chief products are timber and a variety of forest products, camphor, rubber, spices, rice, etc.; and coal, iron, gold, and mineral oil are found. There is a railway from Jesselton on the coast to Melalap, 127 miles long. Statistics for 1917 and 1918 are as follows:

	1917	1918
Revenue	£280,480	£303,063
Expenditure	170,685	191,895
Imports	624,487	761,358
Exports	1,076,073	1,019,094

BRITISH SOMALILAND. See SOMALILAND PROTECTORATE.

BRITISH SOUTH AFRICA. See SOUTH AFRICA, UNION OF.

BRITISH WEST AFRICA. A term including the British colonies and protectorates in West Africa, namely Nigeria (colony and protectorate), Gold Coast (comprising the Gold Coast colony, Ashanti and Northern Territories), Sierra Leone (colony and protectorate), Gambia (colony and protectorate). See these separate titles.

BRITAIN, CARLO BONAPARTE. Naval officer, died April 22nd. He was born at Pineville, Ky., Jan. 16, 1867, and graduated at the United States Naval Academy in 1888. During the Spanish-American war he served on the *Newark*, the *Brooklyn*, and *Badger*. He was in the Philippines from 1900 to 1903 and was in command of the *Massachusetts* in 1910 and of the *Wheeling*, 1911-12. From 1913 to 1915 he was assistant to the Bureau of Navigation. He became chief of staff of the Atlantic fleet, June 30, 1919.

BROCKWAY, ZEBULON REED. American penologist, died at Elmira, N. Y., October 21. From 1876 to 1900 he was superintendent of the State Reformatory at Elmira and had long been one of the best-known penologists in the United States. He was born in Lyme, Conn., April 28, 1827, and he began his work in the service of the Connecticut State Prison, but soon afterwards became superintendent of the penitentiary of Monroe County, N. Y. From 1861, he assumed charge of the House of Correction in Detroit, Mich., remaining there until 1876, when he became superintendent of the Elmira institution. He was celebrated as a prison reformer, chiefly by the introduction at the Elmira reformatory of the indeterminate sentence which was there pronounced successful and which was largely adopted in other prisons. Objections being raised against him on the score of disability due to old age, he resigned in 1900, but subsequently was elected Mayor of Elmira, 1905. He was elected president of the National Prison Association in 1898. He wrote *Fifty Years of Prison Service* (New York, 1912).

BRODHEAD, J. DAVIS. Former congressman and judge, died at Washington, D. C., April 23. He was born at Easton, Pa., Jan. 12, 1859; studied at Catholic colleges and was admitted to the Pennsylvania bar in 1891. In 1907-08, he was member of Congress from Pennsylvania. He then resumed the practice of law and was appointed judge of the Third Judicial District (1914-16). In 1916-17 he was director of the Federal Reserve Bank at Philadelphia, and in 1917-18 served as chief of the Department of Corporation Management under the Trading with the Enemy Act.

BROOKLYN INSTITUTE OF ARTS AND SCIENCES. This institute was founded in 1824 and reincorporated in 1890. It is composed of four departments, namely, the Department of Education, headed by Charles D. Atkins; the Department of Museums, including the Brooklyn Museum, and the Children's Museum, headed by William H. Fox; the Department of Botanic Gardens, headed by C. Stuart Gager; and the Department of Biological Laboratory, headed by Charles B. Davenport. Addresses, lectures, courses of instruction, concerts, and meetings are offered by the educational department. Each year many important men lecture, and eminent artists give concerts. Only very small fees are charged for these opportunities. One of the well-known features of the institute is the School of Pedagogy. The art, ethnology, and natural science departments of the Brooklyn Museum are among the finest in the country. The Botanic Garden stands among the leading botanic gardens of the country. The total membership in all departments at the close of 1920 was 10,739. The total attendance for the season 1919-20 was 762,634. The total receipts for the same year were \$432,644.47, and the permanent funds totaled \$1,069,841.55. During 1920 Mrs. Georgietta Proctor bequeathed \$35,000 to \$40,000 to the Department of Education to be known as the Alfred Waters Proctor Fund. There are branches of the Institute at Jamaica and Huntington, Long Island. Mr. H. Augustus Healy resigned in June, 1920, after having been president for 25 years. Mr. Healy was elected honorary president of the Board of Trustees. Mr. Frank L. Babbott is now president of the Board of Trustees. Headquarters are care of The Brooklyn Academy of Music, Lafayette Ave., Brooklyn, N. Y.

BROUGHTON, RHODA. British novelist, died near Oxford, June 5th. She was born Nov. 29, 1840, her father being a rector and squire in Staffordshire. She passed the greater part of her life at Oxford. Her voluminous writings began with the novel entitled *Cometh Up as a Flower*, which appeared in 1867. She continued to publish at comparatively short intervals throughout her life and a new novel by her was about to appear at the time of her death. Her novels were marked by vivacious and entertaining qualities but never attained literary distinction. They are of value, however, for their clean-cut delineation of the times with which they deal. The earlier stories showed a spirit radical in intent, and perhaps radical in effect at the time, but somewhat mild to modern eyes. By her contemporaries she was rated as high as the Brontës and her novel *Not Wisely but Too Well* which appeared in 1867 was compared with *Jane Eyre*. She had many imitators whose writings were far more insipid than her own, for despite its defects her work showed keen observation and constituted a solid contribution to the history of English manners.

BROUSSON, LOUIS MAURICE. British journalist, died January 1st. He was for many years the editor and manager of the London *Citizen*. Early in his career he interested himself in financial journalism and published a French daily financial paper in London after 1880. He was city editor of many provincial papers and from 1890 to 1904 of the *Financial News*.

BROWN, FRANK. Former governor of Maryland, died at Baltimore February 3rd. He was

born in Carroll County, Aug. 8, 1846. In 1870-76 he was a member of the Maryland House of Representatives, and in 1886-90, postmaster of Baltimore. He was governor, 1892-96. In his later years, he devoted himself to farming and stock-raising on a large scale. In politics he was a Democrat.

BROWN, UNIVERSITY OF. An institution of the higher learning at Providence, R. I., founded in 1764. The enrollment for the fall of 1920 was as follows: Undergraduate men, 965; undergraduate women, 301; enrolled in extension course, 900. The faculty contained 80 members. The productive funds, June 30, were \$5,824,823. The John Hay Library contained 270,000 volumes. Funds were available under the gift of Jesse H. Metcalf for the building of a new chemical laboratory, and plans were under consideration during the year. Funds were also available under the gift of Edgar L. Marston, for the building of the Marston Modern Language Building, for which plans were under consideration. A Soldier's Gateway, a memorial to the Brown men who died in service during the late war, was near completion. It was built of Indiana limestone, and the estimated cost was \$34,000. During the year the gifts received and promised reached the amount of over \$2,500,000. President, William Herbert Perry Faunce, D.D., LL.D.

BROWNE, CHARLES FRANCIS. Artist, died March 30th. He was born at Natick, Mass., May 21, 1859, studied at the Boston Art Museum and at the Pennsylvania Academy of Fine Arts, then in Paris under Gerome and other masters. He taught and lectured on the history of art at the Chicago Institute for many years. He exhibited at the important exhibitions and he was the winner of the Fine Arts Building prize in 1908. From 1912 to 1914 he was president of the Society of Western Artists and from 1913 to 1919 president of the Chicago Society of Artists.

BROWNING, WILLIAM J. Former congressman, died at Camden, N. J., March 24th. He was born at Camden, N. J., April 11, 1850; went into business in 1865 and became a member of the Camden City Council and of the Board of Education; and served as postmaster, 1889-94. He was elected to Congress, November, 1911, to fill out an unexpired term, having previously served for six years as chief clerk of the House, and he was reelected, and remained in Congress from 1913 to 1919. In politics he was a Republican.

BRUCH, MAX. German composer, died at Berlin, Germany, October 3. He was born at Cologne of Jewish parents, Jan. 6, 1838, and in 1863 produced the opera *Lorelei* which was partly set to music by Mendelssohn. From 1880 to 1883 he was conductor of the Liverpool Philharmonic Society and from 1883 to 1890 of the Breslau Orchestral Society, and thereafter lived in Berlin and Bonn. In 1883 he visited the United States and conducted his oratorio *Arminius* at Boston. He was among the leading musicians of Germany in the special field of the epic cantata. The best known of his orchestral works is the *Scenes from the Frithjof Saga* and another well-known work is *Kol Nidrei*. His violin and orchestra concertos were regarded as among the best of their kind. His work includes also chamber-music, in which field he wrote two string quartets and a trio.

BRUNIDI, LAWRENCE. See PAINTING AND SCULPTURE.

BRUSH. DANIEL HARMON. American brigadier-general, died March 8th. He was born in Illinois, May 9, 1848, and entered the Civil War as a private. He afterward graduated from the United States Military Academy, 1871, and passing through the successive grades became inspector-general, March 21, 1904, with the rank of colonel. In 1908 he was raised to the rank of brigadier-general and retired in 1912.

BRYN MAWR COLLEGE. An institution for the higher education of women, at Bryn Mawr, Pa., founded in 1880. The student enrollment in the fall was 470, and there were 64 members in the faculty. The productive funds amounted to \$4,197,676, and the income for the year ending Sept. 30, 1920, was: From productive funds \$127,626; tuitions and fees from students, \$994,175; other sources, \$146,390. The library contained 92,000 volumes. The Bryn Mawr endowment funds for the increase of salaries of the teaching staff during the year ending Sept. 1, 1920, amounted to \$2,191,346 in money and pledges, including a gift of \$100,000 from John D. Rockefeller, jr., to found a Grace Dodge Chair in Industrial Supervision and Employment Management in the Carola Woeris-hoffer department. President, M. Carey Thomas, Ph.D., LL.D., L.H.D.

BUBONIC PLAGUE. The following account of bubonic plague in the United States was published by Dr. W. H. Kellogg, of the California State Board of Health: The first appearance of plague on the North American Continent was in 1900 at San Francisco, when the body of a Chinese, dead of this disease, was discovered in the Chinese quarter. This case was proven bacteriologically to be plague, and the Board of Health of San Francisco, on receipt of the preliminary findings, placed the entire district known as Chinatown, comprising about twelve square blocks, in quarantine, the quarter being roped off and police placed on guard. The disease continued to manifest its presence now and then until a total of 121 cases and 113 deaths had been reached by February, 1904, when the last case of this series was found. In May, 1907, a year after the great fire and earthquake, plague was again discovered in San Francisco. A sailor taken to the Marine Hospital from a tug in the bay was found to be suffering from plague, but he died without being able to give any account of himself, and the tug was lost off the Mendocino coast, thus effectually blocking any further investigation. On August 12th the second case of the second epidemic appeared, followed by 13 others before the end of the month. The epidemic lasted six months, and the total number of cases was 160, with 77 deaths; this time not in the Chinese quarter alone, but scattered all through the city. The last case of the series occurred on June 30, 1908. During the year 1907 seven cases were found in Seattle, Wash. In three years intervening between Feb. 1, 1908, and the end of the year 1915, inclusive, sporadic cases of human plague of squirrel origin occurred in California to the total number of 13 in the counties of Los Angeles, Alameda, Santa Clara, San Benito, Contra Costa, San Joaquin, and Monterey. During the years 1916, 1917, and 1918 no cases of human plague are known to have occurred anywhere in the United States. Extension of the infection to the ground-squirrel population of the rural territory adjacent to San Francisco was first demonstrated in August,

1908, although it is probable that the infection was carried from rats to squirrels in the vicinity of the Port Costa warehouses during the first epidemic in 1900-1904. This probability is indicated by the occurrence of two deaths from plague in widely separated locations in Contra Costa County in August, 1903. The ground squirrels of this State have, therefore, harbored the infection for nearly twenty years, and if it is not eliminated from among them by a very wide and expensive campaign of extermination there seems little room for doubt that a permanent endemic focus has been established. The extent of plague prevalence among the ground squirrels is shown by the Public Health Reports of recent date. For the period of the report, which varies with different counties from a few days to three months, ending July 10, 1920, infected squirrels were found as follows: Alameda County 28, Contra Costa County 46, Merced 1, Monterey 3, San Benito 16, San Mateo 3, San Joaquin 4, Santa Clara 12, Santa Cruz 26, and Stanislaus 2. The figures for the total number of infected rodents found since the beginning of the work in 1907 are startling. In San Francisco the number of rats found was 398, the last one having been discovered in October, 1908, and in Oakland 126 rats, the last one in December, 1908. Alameda County has a record of 431 squirrels, the last being found in September, 1919. Contra Costa County holds the record, the total number of infected squirrels found being 1698.

Following the decade ending with 1918, plague showed a tendency toward recrudescence. In Oakland a series of 13 pneumonic cases occurred in August, 1919, the first of the series having its origin in exposure to plague-infected ground squirrels. This appearance of pneumonic plague in epidemic form, small as was the outbreak, is very disquieting. Plague of squirrel origin seems particularly prone to attack the lungs when transmitted to man, and the danger is that in another such series of cases a sufficient degree of specific organ virulence may be developed to insure the rapid spread of this type. If the conclusions of Teague and Barber are correct, and they appear most plausible, there is much to be feared from this contingency under circumstances permitting extension to some of our Eastern States in winter. It is easily possible for a person, after inoculation by a squirrel flea, to travel to some eastern point, reaching his destination before the onset of symptoms. If now he develops a bubo with a secondary pneumonia, as did the first case of the Oakland series, in the proper climatic surroundings for transmission of the infection, the rôle of plague as a national problem would be immediately recognized. In 1920 the plague occurred in California (one sporadic case of squirrel origin), in New Orleans (three cases in May and June), in Galveston, Texas (two cases), in Pensacola, Fla. (four cases in June and three in July), in Beaumont, Texas (seven cases between June 26 and July 18), and in Port Arthur, Texas (one case in July). Rat examination by the Public Health Service in the above-named cities disclosed a rat epizootic in Pensacola, Beaumont, Galveston, and New Orleans. The disease is present in so many countries now that a list of those harboring it would include most of the nations of the world. In Europe it has been reported recently in Greece, England, Italy, Malta, Russia, and France. In July, 1919, a

dock laborer in Liverpool died of plague, and there is little doubt that the infection prevails among the rats of that city. Human cases have recently been reported from Hawaii, and there was a sharp outbreak in Vera Cruz, Mexico, where it was first discovered in May, 1920. Several cases occurred in Newfoundland.

BUCKLEY, JAMES MONROE. American clergyman and journalist, died February 8th. From 1880 to 1912 he was the editor of the *Christian Advocate* in New York City. He was born at Rahway, N. J., Dec. 16, 1836, studied theology at Exeter and entered the Methodist Episcopal Church in 1858. He remained in the ministry until 1880. Among his books may be mentioned: *Supposed Miracles*; *Midnight Sun*; *Faith Healing*; *Travels in Three Continents*; *Wrong and Peril of Women's Suffrage*.

BUCKWHEAT. According to estimates published by the Department of Agriculture, the buckwheat production of the United States in 1920 was 13,789,000 bushels on an area of 729,000 acres, the average yield being 18.9 bushels per acre. The area was estimated at 10,000 acres less than that of 1919, and the total yield as reduced by 1,455,000 bushels. In 1918, under the stress of war conditions, over a million acres were grown, but since then the acreage has undergone a marked decline. The farm value of the crop on Dec. 1, 1920, was 129.1 cents per bushel, or 17.8 cents less than on the corresponding date the year before but 9.3 cents above the average price on that date for the five years 1914-18. The total farm value of the crop on that date declined from \$22,397,000 in 1919 to \$17,797,000 in 1920 and even \$534,000 below the average for the five-year period mentioned.

Buckwheat is grown commercially in about 23 States but over 60 per cent of the total yield is produced in New York and Pennsylvania. West Virginia, Michigan, and Ohio rank next in importance, but these States produce only about 20 per cent of the country's crop. It is grown mostly east of the Mississippi River; the only western States reporting buckwheat culture on a commercial scale are Iowa, Minnesota, Missouri, and Nebraska. The results of experiments by the West Virginia Experiment Station pointed out the value of Japanese buckwheat as a high yielding variety, and indicated further that buckwheat is not a good nurse crop for vetch, clover, and alfalfa. (West Virginia Experiment Station Bulletin 171.)

BUFFALO, N. Y. See GARBAGE.

BUILDING. In 1920 owing to construction and material costs, comparatively little building was done and there was a great shortage especially in dwellings. High rates for money, high costs of materials, and high costs of labor all contributed to this end and the situation was such that national and State investigation of conditions were held during the year. In New York in particular a peculiarly serious development was discovered which showed conclusively that artificial and to a large degree criminal activities had increased building costs to an inordinate amount even with the unfavorable general industrial conditions. In New York City it was shown that building labor organizations were under the arbitrary control of an individual who was able to extort large sums from those engaged in carrying on operations. Furthermore various sub-contractors were organized into associations which promoted collusive

bidding as not only was demonstrated but admitted by pleas of "guilty" when criminal prosecutions were held. In addition relations were maintained between certain large general contractors and corrupt leaders of labor, thus insuring privileges in the way of regular work and by certain organizations. Finally, what was shown to be a nation-wide situation, material dealers and material manufacturers were so organized that by collusive action in various associations prices were raised to exorbitant figures solely by artificial means, in most cases of doubtful or more than doubtful legality. Such a situation was revealed in New York City by the so-called Lockwood Committee of the State Senate and at a time of housing needs and increasing rentals for dwelling property it struck with particular force. Soon it was realized that it was a more than local condition and there was at the end of the year a general demand for similar investigations elsewhere in the United States and even for a national investigation.

Of course other and even more fundamental reasons existed for reduced building in 1920, which was expected to fall below that of 1919. For the earlier year a report issued by the United States Geological Survey, Department of the Interior, on building operations in the larger cities of the country in 1919, by Jefferson Middleton, was of interest. In this report the number and cost of buildings erected in 128 cities, classified by the character of the principal material entering into their construction are given.

In these cities there were 186,933 new operations, costing \$951,047,495; 131,729 additions, alterations, or repairs, costing \$171,024,832; and 20,846 miscellaneous operations, costing \$15,246,422.

In 141 cities 365,972 permits were issued or buildings erected in 1919, representing a cost of \$1,302,998,607. Approximately the same cities reported 210,538 building operations in 1918, costing \$430,041,365, and the record for 1919 thus shows an increase of 155,434, or 74 per cent, in operations, and of \$872,984,242, or 203 per cent, in cost. The average cost per operation in 1919 was \$3560.

CONCRETE CONSTRUCTION. During 1920 several notable reinforced concrete buildings were under construction in New York City. These were notable for their height and for the fact that this type of construction for high buildings previously had met with comparatively little favor in New York City. A building 16 stories high of this material was designed for erection in the leather district of New York City, just below Brooklyn Bridge at the corner of Gold and Frankfort streets, on a plot 69 x 74 feet, and was to be 189 feet high. This made a record height for such a structure on Manhattan Island, where concrete has been used sparingly and only for lofts and factories. During the year there was also under construction the largest building of reinforced concrete ever built in Manhattan and one of the largest concrete office buildings ever erected. The structure was partly an 11 story office building and warehouse and partly a five story and basement warehouse mainly for the use of the Western Electric Company; and the New York Telephone Company was to occupy the entire block surrounded by Hudson, West Houston, Greenwich, and Clarkson streets, covering an area of 338 x 200 feet. There was to be 583,000 square feet of floor area, and it was to be

throughout of reinforced concrete, with the exception of a veneer of brick on the exterior walls. The cost of the whole operation was said to involve nearly \$3,000,000.

The decline in residential construction in the United States was clearly indicated in the annual statistics compiled by the F. W. Dodge Company, New York. The decline in residential building during 1920 was most conspicuous. In 1919 this class of construction represented 33 per cent of the total, while in 1920 it fell to 22 per cent. The amount of residential floor space contracted for fell off from 240,000,000 square feet in 1919 to 140,000,000 in 1920.

In New York City while there was an increase in building plans filed in 1920, comparatively little was done to provide increased housing. According to the annual report of the Manhattan, New York City, Bureau of Buildings for the year 1920, plans were filed for 783 new buildings costing a total of \$96,199,860, as against 370 buildings costing a total of \$72,283,061 during 1919. The most active month of the year was July, when plans were filed for 141 new buildings. Classification and cost of construction was as follows:

Number	Class	Cost
22	Dwellings	\$1,508,500
22	Tenement houses	13,565,000
48	Stores and lofts	6,836,250
81	Office buildings	44,668,400
23	Manufactories and workshops	500,000
1	Church	60,000
14	Municipal buildings	5,140,000
8	Hospitals	5,350,000
482	Garages	6,348,318
51	Other structures	408,892

Of these new buildings for which plans were filed, construction of 300 was commenced and 253 were completed.

BUILDING OPERATIONS. See BUILDING and ARCHITECTURE.

BUKOWINA. Formerly a crownland in the Kingdom of Austria, to the south of Eastern Galicia, with Russia and East Rumania on the east, and Rumania on the south. On the disruption of the Austro-Hungarian Monarchy in 1918, it was annexed to Rumania. The area according to the census of 1910 when it formed a part of the Austrian kingdom, was 4033 square miles; population in 1913, 818,328. It was formerly represented in the Austrian Parliament by 14 members. In the Rumanian state it was represented in March, 1920, by 19 members and in the Chamber of Deputies by 16.

BUCKNELL UNIVERSITY. An institution of the higher education at Lewisburg, Pa., founded in 1846. The total student enrollment in the fall of 1920, including post-graduates, was 809. The income for the year was \$545,000. The library contained 55,000 volumes. A professor of Spanish and French, a professor of domestic science and two instructors in mathematics and engineering were added during the year. President, Emory W. Hunt, D.D., LL.D.

BULGARIA. One of the Balkan Powers, a constitutional monarchy situated to the south of Rumania and to the east of Serbia. From Oct. 12, 1915, when she declared war against Serbia, Bulgaria was definitely ranged on the side of the Central Powers and she was the first to suffer defeat, surrendering unconditionally in October, 1918. The Czar Ferdinand then abdicated and was succeeded by his son, Boris. See

below, under *Government*; also the article *WAR OF THE NATIONS*.

AREA AND POPULATION. The estimated area in 1917 was 47,750 square miles; estimated population, 5,517,700. No later figures are available than those given in the preceding *YEAR BOOKS*. By the peace treaty of Neuilly, signed Nov. 23, 1919, Bulgaria lost her Aegean coast and ceded Thrace to Greece and the Strumnitza line and a zone on the northwestern boundary to Serbia. The religion is the Greek Orthodox and in 1910 3,643,918 belonged to that communion. The Mohammedans at that time numbered 602,078. Education is subsidized annually by the state to the extent of one-half of the cost of general and two-thirds of the cost of elementary schools. The local authorities pay the remaining cost. Instruction is free and nominally compulsory between the ages of seven and 12. There is a university at Sofia with the four faculties of history and philology, physics and mathematics, medicine, and law.

PRODUCTION, INDUSTRY, AND COMMERCE. The chief occupation is agriculture which engages about five-sevenths of the people, for the most part small proprietors, holding from one to six acres. The principal field crops grown in Bulgaria are wheat, corn, barley, oats, rye, and tobacco. Rice is grown in the southern part of the country, and roses, from which attar of roses is distilled, in certain districts. The harvest seasons for grain are about the same as those in the central latitudes of the United States. It is estimated that there are more than 500,000 farms in the country, but these are for the most part very small. Less than 5 per cent of these farms are 100 or more acres in extent. The soil is of various kinds, including sandy loam, clay, black lands, and heavy gumbo, the last probably being most general. The country is usually rolling or hilly, although a considerable tract of flat land is found on the south side of the Danube and in some of the other river valleys. Modern agricultural machinery, including tractors, are in use in many places. The tractors imported during the last four years or so (perhaps about 50) came chiefly from Germany and Austria. As a rule these tractors have proved to be too large for the requirements of the country. The tractor that would find the readiest market should be of 18 to 25 horse power and suitable for a two or three bottom plow. Tractors are rarely used for hauling in Bulgaria, but are at times used for belt work in thrashing, sawing, and sometimes in mills to take the place of water power when the streams are frozen. See *AGRICULTURE*.

According to the Bureau of Statistics of the Bulgarian government the production of cereals in Bulgaria in 1919 was as follows:

Cereals	Area under cultivation Hectares *	Crop Tons
Wheat	841,717	926,112
Rye	180,406	164,860
Meslin	86,519	94,541
Barley	192,694	225,809
Oats	122,016	107,226
Spelt	7,440	7,523
Millet	13,587	13,847
Maize	563,448	985,296
Rice	1,779	2,396
Buckwheat	26	45
Total	2,008,632	2,527,655

* The hectare = 2.471 acres.

According to estimates, the 1920 harvest showed an increase of about 30 per cent over that of 1919, so that the total crop was expected to be about 3,286,000 tons. As local consumption was estimated at about 1,905,000 tons, there would remain a balance for export of about 1,381,000 tons.

The following information in respect to mineral resources and their exploitation was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920 on the basis of investigations under the British Chamber of Commerce of Turkey and the Balkan States: Since 1878 mining development has been on a restricted scale only and with primitive methods, but that during the past 10 years German and Austrian engineers have carefully studied the ground. Although their reports have been revealed only to the commercial departments at Berlin and Vienna, it is known that "Bulgaria was considered the treasure box of the Balkans for minerals," and German interests were very active for two years prior to the war. In 1918 that country spent considerable sums in deep drilling for coal and other minerals, and in consequence of certain information that leaked out to the public a number of claims (350 in one year) were filed in the Department

former, smelting works erected some years ago were being worked by a French company. In several districts iron and manganese have been discovered, but remain undeveloped from lack of knowledge and financial backing. The same causes have prevented exploitation of gold in the river beds. Deposits of zinc and lead also are numerous and await development. In all these areas sufficient water can be found to generate power in addition to that available from coal and lignite. In the mountainous districts are numerous quarries containing large quantities of granite, marble, lithographic stones, millstones, fuller's earth, fire clay, etc., in great varieties; but these have not received enough attention to determine their importance and classification. Soft limestone from the Rustchuk district is exported to Rumania and is used in Bucharest for buildings. The valuable mineral wealth of Bulgaria "has never been known and it now only needs exploiting; many of the raw materials required in England are to be found in Bulgaria." See PETROLEUM.

COMMERCE. The following table from United States *Commerce Reports* shows imports and exports in 1912 and 1919 by countries of origin and destination:

Countries	Imports		Exports	
	1912 Leva	1919 Leva	1912 Leva	1919 Leva
Austria	51,403,000	194,971	15,523,000	17,605,926
Austria-Hungary	31,771,000		16,409,000	21,273,518
England	5,885,000	104,849,723	41,843,000	140,000
Belgium	43,526,000	3,360	24,584,000	20,918,152
Germany	833,000	302,564	8,383,000	30,953,296
Greece	13,237,000	53,341,143	8,713,000	68,208,257
Italy	13,415,000	345,893,675	1,436,000	12,422,754
Roumania	9,778,000	24,024,832	348,000	2,458,620
Russia	4,543,000	6,674,027	1,594,000	184,800,875
United States	1,790,000	195,111,815	458,000	
Serbia	18,592,000		17,023,000	64,046,030
Turkey	14,998,000	146,995,483	7,568,000	21,401,045
France	2,518,000	5,779,772	1,460,000	
Netherlands	2,816,000		343,000	1,010,550
Switzerland	1,603,000	11,203,000	3,000	
Sweden and Norway				
Spain		22,625,987		
Poland				12,804,248
Czechoslovakia		89,346,696		80,921,850
Yugoslavia		7,118,545		1,751,861
All other countries	1,902,269	480,642	10,718,624	11,541,970
Total	213,110,269	963,941,235	156,406,624	552,253,452

of Mines. Between 1900 and 1919 the claims filed for minerals and quarries totaled 3514. Up to 1912, 40 concessions were granted, covering an area of 13,174 hectares.

Since 1912 many concessions for lignite and oil schist areas have been granted. In 1916 Germany "carefully explored these areas and large samples of lignite were sent to Berlin for testing and briquetting," the average calorific value proving between 2300 and 4500. The Pernic (government) areas—25 miles long and 8 miles wide—contain the best lignite fuel. Their future productivity is estimated at 4000 tons per day, six days a week, and 52 weeks a year, for 500 years. The Sofia district also has numerous areas rich in lignite and bituminous coal. The latter is found in a basin 40 miles square lying some 50 kilometers west of Sofia. Seams have been exposed ranging from 3 to 10 meters in thickness. While the coal analyzes from 7000 to 8500 calories, it crumbles so easily as to require briquetting. Placalnitz, 70 kilometers west of Sofia and Burgas, on the Black Sea, contain several rich copper deposits. At the

From the above table it can be seen that the United States ranked 10th in supplying Bulgaria's imports in 1912 and second in 1919. As a market for Bulgarian products the United States ranked ninth in 1912 and first in 1919.

FINANCE. The Finance Minister made the following report on the financial situation in 1920: There had been a deficit in every budget since 1911. In 1914 the deficit was 68,000,000 leva; in 1915, 99,000,000; in 1916, 853,000,000; in 1917, 1,185,000,000; in 1918, 1,499,000,000; in 1919, 686,000,000. The total deficit during the war was 5,000,000,000; the consolidated debt in 1920 was 555,000,000 and the non-consolidated 462,000,000. The indebtedness of the government to the National Bank of Bulgaria amounted in 1920 to 2,949,000,000 leva; moreover, Bulgaria owed an indemnity of 2,260,000,000 gold francs. For 1919 and 1920 the government expended for ordinary general expenditures 1,205,705,000 as against receipts of 819,000,000 leva, not including the military credits, so that the deficit would reach the sum of 1,100,000,000 leva. The expenditures to be covered for the fiscal year 1920-21

amounted to 3,000,000,000 leva. In spite of this all the needs of the government were not provided for. The government had been unable to find new revenues. Recovery was difficult on account of the exhaustion of its national industries. The budget would show a deficit of 200,000,000 leva. To increase the revenues the government would increase direct taxation.

In Bulgaria all parties in preparing their budgets had always endeavored to spare as much as possible the agricultural class, which forms almost 90 per cent of the population. This was especially true of the Agrarian party, which in 1920 was in full control of the government.

DEFENSE. The peace strength of the army before the war was about 59,900 officers and men. Its strength during the war was about 500,000 men. The armistice was granted Sept. 30, 1918, and demobilization followed at once. The treaty of Neuilly, Oct. 27, 1919, limited the total military forces in the future to 20,000 men and prohibited any measures of mobilization. It permitted the voluntary enlistment of a frontier guard of 3000 men and aside from these it limited the number of police, customs officials, gendarmes, etc., to 10,000. The possession of military or naval aircraft was forbidden; the importation and exportation of munitions of war were prohibited; and the manufacture of arms and munitions was to be confined to a single factory under state control. As to the naval forces, Bulgaria had to surrender all warships and submarines and was allowed to retain only a few torpedo-boats and motor-boats on the Danube and along the coast.

GOVERNMENT. The executive power is in the King and a Council of Ministers nominated by him. The legislative power is in a single chamber called the Sobranje, whose members are elected by universal manhood suffrage for four years, though the chamber may be dissolved at any time by the King. The King's consent is necessary to the measures passed by the Sobranje. There is also a special large assembly known as the Grand Sobranje containing twice as many representatives as the regular assembly, which is elected in the same manner and has to do with all questions involving changes in the constitution, the acquisition or cession of territory, and vacancies on the throne. Boris III succeeded on the abdication of his father, Oct. 4, 1918, and a new cabinet was appointed Oct. 14, 1919, which as reconstituted in April, 1920, comprised the following members: Prime minister, Minister for Foreign Affairs, and Minister of War, M. Stambulinski; Minister of the Interior, M. Dimitroff; Minister of Justice, Dr. Djidroff; Minister of Commerce, M. Athanasoff; Minister of Agriculture and Minister of Finance, M. Daslakiff; Minister of Public Works, Alexander Stambolisky; Minister of Posts and Railways, M. Torlakoff; Minister of Education, M. Kaloff. The election to the Sobranje on March 31, 1920, returned the following representatives of the various parties: Agrarians, 1200; Advanced Socialists, 50; Moderate Socialists, 39; Democrats, 39; Popular Party, 19; Radicals, 8; Progressives, 8; National Liberal, 1.

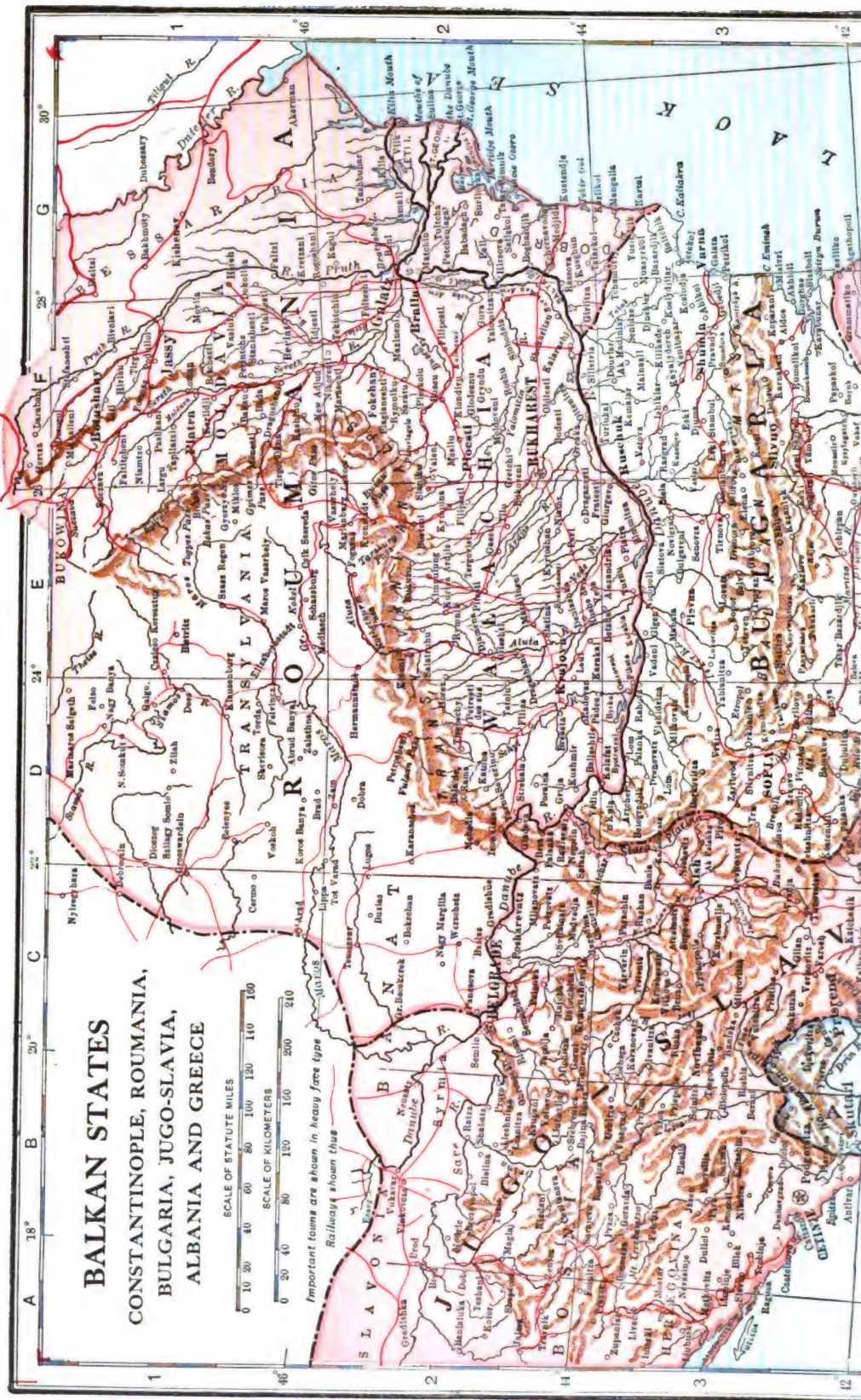
THE TREATY. As was said in the last YEAR BOOK, the treaty with Bulgaria was signed at Neuilly near Paris, November 27. The chief territorial and political clauses were as follows: The cession to the principal Allied and associated Powers of Thrace to dispose of as they saw fit,

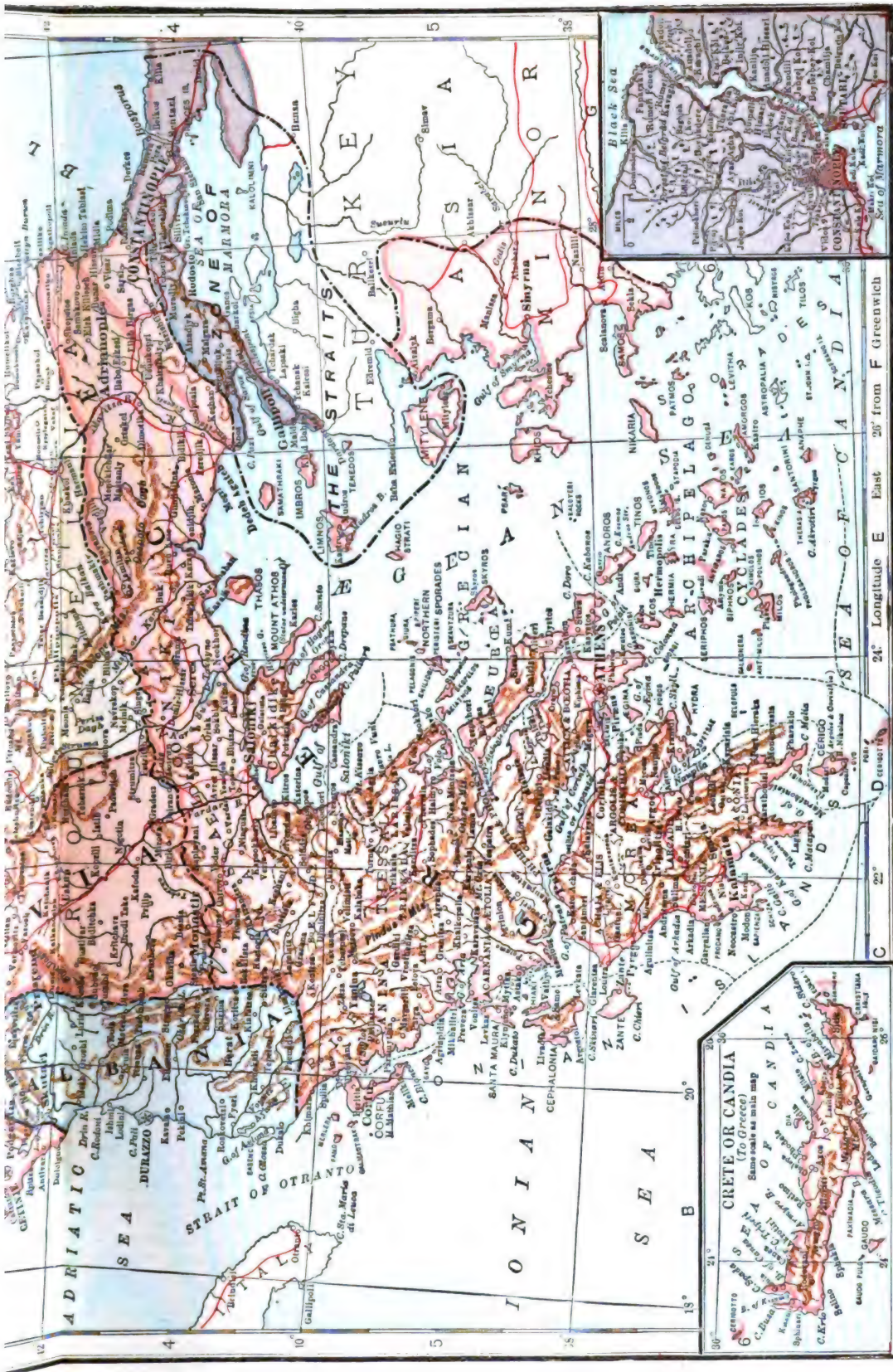
but with the assurance that Bulgaria should have an economic outlet to the Aegean Sea; slight change of the western frontier to the advantage of Serbia; addition to Bulgaria of a small tract of Turkish land; the question of the cession to Roumania of the Bulgarian port of the Dobrudja to be left open; Bulgarian recognition of the independence of Jugo-Slavia; protection of racial minorities. The principal military features were the surrender of warships, etc.; the demobilizing of the army, and its limitation in the future to 20,000 men; the limitation of the manufacture of war material. The essential point in the financial terms was the payment as reparation of \$445,000,000. As among the other Central Powers, there was great dissatisfaction with the terms of the treaty and they were regarded as a violation of the principles laid down by President Wilson. Prominent Bulgarians declared that every one of the Fourteen Points had been violated or disregarded. It was said, for example, that it was a gross violation of both spirit and letter that Macedonia with a Bulgarian population of 1,250,000 should be handed over to Serbia and Greece; that the Dobrudja should be handed over to Roumania when the Roumanian population was less than 7000 out of a total of 275,000; that Thrace, where the overwhelming majority was Bulgarian and Turk, should be given to Greece; and that a strip of land containing a Bulgarian population of 92,000 and no Serbians should be annexed to Serbia. There was also much complaint of the severe financial burdens laid upon the country by the treaty. Bulgaria had to pay an indemnity of 2,250,000,000 francs in gold which at the normal rate of exchange would be \$450,000,000. The financial situation was made worse by the low rate of exchange. The treaty was characterized as blundering and vindictive in that it imposed a burden too heavy for the country to bear and at the same time took away valuable territories which might have helped her to pay it. Nevertheless, the government repeatedly professed its intention to carry its terms out faithfully.

ELECTIONS. Elections to Parliament were held March 28. Already in January the government was weakened on account of industrial unrest and movements against the dynasty. The elections reduced the Socialist representatives from 39 to 9. The distribution of seats among the party groups was as follows: Agrarians, or Peasants' party, 110; Communists, 50; Democrats, 23; Populists, 16; Socialists, 9; Progressives, 7; Radicals, 7; Liberals, 3; Ghenadievists, 3. On April 10th, when the new Parliament opened, the Prime Minister, Stamboulinsky, announced the resignation of the non-Agrarian members of the Ministry. The ministerial programme emphasized the need of pushing actively the work of reconstruction and the willingness of the government to resume coöperation with the former enemies.

Municipal elections in October did not reveal any marked change in the relative strength of parties. In the country districts the peasants prevailed and in the towns the strength of the Communists, Democrats, and Liberals remained about the same. A congress of the Macedonian Societies was held at Sofia in October. It declared for social and political solidarity while requiring the strict observance of the treaty.

RECONSTRUCTION. The reconstruction of the country had proceeded satisfactorily since the





end of 1918. Late in 1919 the farmers' party came into power under the prime ministry of the leader of that party, M. Stamboulinsky, and important measures were taken to promote production. The chief of these was the law for labor conscription which provided that all men over 20 and women over 18 years of age were subject to compulsory labor. The purpose of the law was to make the best possible use of social forces in order to increase production, and to elevate the people morally and economically by giving them the sense of duty to society as a whole. Another measure appropriated to the state for public use the surplus land of individuals who could not cultivate it themselves. After the loss of so large a part of the territory inhabited by Bulgarians, a large number of the natives sought refuge in Bulgaria and the government had to find a way of providing for some 300,000 of these newcomers. On May 22, 1920, a law was passed against speculation and profiteering, which limited profits to 8 per cent wholesale and 20 per cent retail, and which made certain allowances on behalf of the peasant co-operatives. This led to the criticism in certain quarters that the government showed Bolshevik tendencies. Bulgarian officials, however, denied any such tendencies, holding that the measures taken were necessary for the provision of the requisite production. Elaborate reports on the industrial needs of the natural resources of the country were prepared and distributed among the foreign representatives. In these it was made plain that for two years before the war Germany had practically controlled all the natural resources of Bulgaria. During the year it was reported that foreign engineers were making frequent discoveries of new deposits of lignite and oil and that there were great resources of stone and building materials in the mountain districts, which required only capital for their profitable development.

OTHER EVENTS. There was much discussion of the government's attempt to carry certain laws against foreign or local propaganda which aimed at the overthrow of the present order. Out of the 230 members of the chamber, there were 50 who declared themselves Communists, but it was argued that Bulgaria was not the kind of a country that stood in danger of Bolshevism for it had only a small urban industrial population, the chief element in the population being peasants with small holdings. In the course of the year attempts were made from time to time to bring about more cordial relations with Roumania and Jugo-Slavia, but down to the end of the year nothing had come from them. The Prime Minister was known as a champion of Balkan unity and had many times urged the forming of a Balkan confederation. One of the obstacles to this was the bitter hatred on the part of certain elements in Serbia. Another was the resentment caused by Serbia's and Roumania's treatment of the Bulgarian majorities in the territories acquired by them as a result of the war. According to the published reports, the King was popular and the government in 1920 possessed the confidence of the majority. At the same time there was a danger from the long standing rivalry among the many party groups. On September 19th, the 35th anniversary of the union of Southern and Northern Bulgaria was celebrated. At this time there was much discussion arising from the demand of the Reparation Com-

mission that some 500 Bulgarians' accused of committing atrocities should be delivered for punishment in the courts of Serbia, Roumania, and Greece. Much resentment was expressed in the newspapers. See **WAR OF THE NATIONS**.

BULLEN, ARTHUR HENRY. British Elizabethan scholar, died at Stratford-upon-Avon, February 29. He was born in 1857 and devoted himself at an early age to the study of Elizabethan dramatists. He shared this interest with the poet Swinburne with whom he was on intimate terms until Swinburne's death. The most generally admired of his works are his lyrics from the Elizabethan song books and his edition of Thomas Campion whose works had been practically forgotten for 300 years. Upon the revival of the *Gentleman's Magazine* he received the offer of the editorship.

BURCH, CHARLES SUMNER. Bishop of New York, died in New York City, December 20. In September, 1919, he had been appointed bishop to succeed Bishop Greer. He was born at Pinckney, Mich., June 30, 1855, and graduated at the University of Michigan. After working on newspapers in Detroit and Chicago he was editor and manager of the Grand Rapids *Evening Press* for nine years. Meanwhile he devoted himself to the church and in 1905 after taking his course in the Western Theological Seminary at Chicago, he was ordained priest. He studied in Germany and at Oxford, England. He was rector of St. Andrew's Church, Staten Island, 1905-11, and consecrated suffragan bishop of New York, Feb. 24, 1911. During his pastorate on Staten Island he interested himself greatly in missionary work among the Italian communities and among the prisoners in the city prisons of New York. As a bishop he applied great energy to hasten the work upon the uncompleted cathedral.

BURDETT, Sir HENRY. British author and statistician, died April 29. He was author of *The Hospital*. He was born March 18, 1847, and served as superintendent of Queen's Hospital, Birmingham, and the Seaman's Hospital, Greenwich. The list of his writings on subjects of finance, taxation, hospital administration, sanitation, etc., is too long to be given here. They include many works on the training of nurses and on the housing of the poor and other matters pertaining to public health and welfare; 17 volumes of *Burdett's Official Intelligence*; *British-American Foreign Securities*; four volumes on *Hospitals and Asylums of the World*; *Burdett's Hospitals and Charities*; a *Year-Book of Philanthropy*, etc.

BURDICK, FRANCIS MARION. Professor of law, editor, and author, died at De Ruyter, N. Y. He was born Aug. 1, 1845; graduated at Hamilton College, 1869, and after editing a Utica newspaper, practiced law in that city, 1876-83. He was professor of law at Cornell College, 1897-01, and then went to Columbia University, where he was professor of law and member of the University Council till 1916, when he became professor emeritus. He was prominent in various legal associations and was the author of a number of important law texts, as well as an editor in the Department of Law on works of reference, including the *Johnson's Universal Cyclopædia* and the *NEW INTERNATIONAL ENCYCLOPEDIA*.

BURKE, TOM. See **MUSIC, Artists, Vocalists.**

BURMA. The largest and most easterly province of British India; area about 231,000

square miles; population (1911), 12,115,217. It is separated from China by the Shan States. The population comprises nine racial groups of which the Burman is the chief, Burmese being the language spoken by about 8,000,000 of the inhabitants. Agriculture is the chief occupation. Rice is grown everywhere and is the principal export. Other leading exports are petroleum products, teak and other woods, and cotton. In 1919 the export of rice and paddy amounted to \$78,315,362, a considerable excess over the previous year. The petroleum products exported in 1919 totaled 158,791,000 gallons of mineral oil and 138,050 hundredweight of paraffin and other products. The value of the exports of petroleum products was nearly \$24,000,000. The chief imports are cotton piece goods, jute manufactures, cotton twist and yarn, and metals. Cotton piece goods exported in 1919 were valued at \$16,926,985. The total imports for 1918 were valued at \$82,530,271. The capital of Lower Burma is Rangoon, with a population of 293,316; of Upper Burma, Mandalay, with a population of 138,299. Sir Reginald Henry Craddock was Lieutenant-Governor in 1920.

BURROWS, RONALD MONTAGU. British educator and scholar, died May 14. He was born at Rugby, England, and educated at Oxford where he took honors. He was professor of Greek in the University of Manchester from 1908 to 1913. Besides articles in the classical journals, he published volumes on *Florilegium Tironis Graecum* (1904) and *The Discoveries in Crete* (1907).

BURY, WILLIAM. British clergyman, died April 1. At the time of his death he was Canon of Petersborough. He was born in 1839 and educated at Cambridge where he took honors and where he was prominent in athletics. He devoted himself for many years to the improvement of the poor law and to measures of coöperation on behalf of the small consumer. He wrote various pamphlets and volumes on charity, the poor law, and outdoor relief.

BUTTER. See DAIRYING.

BUTTZ, HENRY ANSON. Clergyman, died at Madison, N. J., October 6. He was born at Middle Smithfield, Pa., April 18, 1835, and entered the Methodist Episcopal ministry in the same year. He held pastorates at several New Jersey cities, but later devoted himself to teaching. From 1867 to the time of his death, he was a member of the faculty at Drew Theological Seminary, where after 1871, he was professor of Hebrew, Greek, and Exegesis, and of which he was president from 1880 to 1912. After 1912, he retired with the title of president emeritus. He was a member of the missionary and other associations of the church. He published Commentaries on the Epistles to the Romans, and various articles on critical subjects, and edited theological works.

BYRON, OLIVER DOUD. American actor, died at Long Branch, N. J., October 22. He was born in 1842. He was one of the best known of the older actors and his last appearance before his death was in *General John Regan* in 1915. He had appeared at the age of 14 in *Nicholas Nickleby*. One of his famous rôles was that of Romeo in which he appeared along with Mrs. Scott Siddons, but his most marked success was the leading rôle in the play called *Across the Continent* which began in 1870 and continued for about 22 seasons, having a longer duration than

almost any other leading rôle played by an actor in America.

CALIFORNIA. POPULATION. According to the preliminary report of the census of 1920, there were 3,426,861 residents in the State Jan. 1, 1920, as compared with 2,377,549 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 117,690, an increase of 33.4 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Prod., bu.	Value
Corn	1920	90,000	8,150,000	\$3,780,000
	1919	90,000	2,970,000	5,316,000
Oats	1920	175,000	5,425,000	4,340,000
	1919	175,000	5,250,000	5,040,000
Wheat	1920	650,000	9,100,000	16,380,000
	1919	990,000	16,335,000	33,323,000
Barley	1920	1,250,000	28,750,000	28,750,000
	1919	1,000,000	30,000,000	42,300,000
Hay	1920	2,355,000	*5,182,000	102,200,000
	1919	2,355,000	*5,092,000	86,553,000
Oranges	1920	.....	*18,700,000	51,425,000
	1919	.....	*15,075,000	41,456,000
Rice	1920	162,000	9,720,000	11,761,000
	1919	155,000	9,300,000	24,831,000
Beans	1920	285,000	2,850,000	9,405,000
	1919	400,000	5,000,000	21,750,000
Potatoes	1920	95,000	13,015,000	19,522,000
	1919	85,000	11,050,000	18,896,000
Sweet potatoes	1920	8,000	1,056,000	1,690,000
	1919	8,000	1,080,000	1,933,000
Cotton	1920	298,000	*150,000	22,500,000
	1919	185,000	*56,000	12,063,000
Hops	1920	12,000	*21,000,000	7,350,000
	1919	11,000	*17,875,000	13,764,000

* Tons. † Boxes. ‡ Bales. § Pounds.

The Agricultural Statistician for California reports for December 5th about 45 per cent of the 1920 rice crop of that State thrashed, 30 per cent still in shock, and the remaining 25 per cent still uncut, with a probable loss in sight of 2,500,000 bushels of the estimated production, due to the continuous rains. See AGRICULTURAL EDUCATION; AGRICULTURAL EXPERIMENT STATIONS.

MINERAL PRODUCTION. The estimates of the United States Geological Survey of output of mineral production in 1919 and 1920 were as follows:

Gold, dollars	Silver, ounces	Copper, lbs.	Lead, lbs.	Zinc, lbs.
1920—				
14,305,300	1,513,495	12,934,900	5,071,600	1,572,500
1919—				
16,695,955	1,107,189	21,732,507	3,568,267	472,990

The outstanding and unprecedented feature of metal-mining in California in 1920 was the closing down of a great number of the largest gold and copper mines, and the conditions generally were decidedly adverse, particularly in the Mother Lode region, where some of the mines that were once among the largest in the State stopped work, several of them permanently. Another feature of the year was the restriction of the supply of power by hydro-electric companies in the fall, which affected the deep mines of all classes as well as the dredging companies. For lack of this usual power some mines had to close altogether and others were compelled to restrict operations. When the first fall rains commenced, in October, the supply of power was at once restored. The hardships suffered by the gold miners in the foothill and mountain counties partly depopulated towns and camps and

even counties. Numerous mines were allowed to fill with water, and some reduction plants were virtually abandoned. The labor available in the mining regions of the State is reported at the end of the year to be still unsatisfactory, and its high cost and inefficiency were the principal causes of the closing down of many large mines and of the curtailment of operations in others, although other high costs contributed to reduce production. Prospecting was almost stopped in the older mining regions, and very few large mining enterprises were started.

Of the total gold produced in the State in 1920, 52 per cent was obtained from deep or lode mines and 48 per cent from placers. The dredges were producing 96 per cent of the placer gold, or 46 per cent of the gold output of the State. There seemed to be a small continuous decrease in the percentage of gold produced by the deep mines and a corresponding increase in the percentage produced by the placers. Of the gold produced by deep mines the larger proportion was derived from siliceous ore, but some was derived from copper, lead, and zinc ores. The dredges were increasing their percentage of the total output of gold, but the hydraulic, drift, and sluicing mines were steadily decreasing their percentage.

The increase in the silver output was somewhat surprising in view of the fact that the largest copper smelters in the State were closed down during the year, for a considerable part of the silver produced is usually obtained from copper ores. But there was an increase in the output of lead and lead-silver ores in Southern California, with consequent increase in silver from those sources. Moreover, the California Rand mine, in San Bernardino County, continued to ship high-grade ore during the year, making a material increase over its normal output. The great decrease in the estimated output of copper was due to the closing of the most productive mines in the State. The increase of lead was due entirely to the production of one mine in Southern California that reported no output in 1919. Moreover, a number of lead and silver-lead properties, mainly in San Bernardino and Inyo counties, began or increased production in 1920. Nevertheless the output of lead in California was still far below normal, as that in 1918 was over 13,000,000 pounds. Zinc was produced at only a few mines in the State, all in Inyo County.

FINANCE. According to the report of the State controller, total receipts during the fiscal year 1919-20 were \$58,742,199.34 and disbursements for the same period were \$61,908,139.73. The assessed value of taxable property on July 1, 1920, was \$4,555,445,447. The net bonded indebtedness on June 30, 1920, was \$50,259,500.

STATE INSTITUTIONS. The total number of inmates in State institutions on Jan. 31, 1921, was 10,317. This was distributed as follows: Industrial Home for Adult Blind, 141; State Reform Schools, 792; State Hospitals for the Insane, 10,616; State Home for Feeble-minded, 1449; State Prison, 2993.

LEGISLATION. No legislative session was held during 1920, but at the general election in November several important constitutional amendments and initiative and referendum measures were adopted. An initiative anti-alien land law, intended to restrict Japanese land ownership, was approved by an overwhelming vote. The

measure was supported by the governor and State Board of Control, which completed earlier in the year an exhaustive study of the Oriental problem in California. (See below.) Other initiative measures approved provided for an increase in teachers' salaries and a procedure for facilitating the sale of State highway bonds. Constitutional amendments were approved providing for extending State aid to families in which the father is incapacitated for gainful work, exempting orphans from taxation and levying a poll tax on aliens. Two referendum measures relating to narcotic drugs and irrigation districts were also approved.

Among proposals defeated were measures relating to prohibition enforcement, a proposal for a constitutional convention, the single tax, absent voters, prohibiting vivisection and vaccination, and a millage tax for the State university.

ELECTIONS. The vote for President was as follows: Harding (Republican), 624,992; Cox (Democrat), 29,191; Debs (Socialist), 64,076; Watkins (Prohibitionist), 25,085; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 466,289; Hughes (Republican), 462,516; Benson (Socialist), 43,263; Hanly (Prohibitionist), 27,713. In the election for United States Senator the vote was as follows: Shortridge (Republican), 447,835; Phelan (Democrat), 371,580; Edwards (Prohibitionist), 57,768; Beals (Socialist), 36,545. The Prohibition Enforcement act and the acts prohibiting vivisection or compulsory vaccination were defeated.

ALIEN LAND LAW. On November 2nd, the referendum on the anti-Alien Land Leasing Law resulted in a vote for acceptance by a majority of 446,397, the figures being 668,483 against 222,086. The State governor declared the act in force on December 10. The acting governor intimated his intention to exercise his full constitutional power in its enforcement. The main object of the act was to prevent Japanese from owning agricultural land in California or controlling it when it belonged to their children born in the United States. Its effect was to render it impossible for the 60,000 to 70,000 Japanese in the State to lease land in their own right, or on behalf of their children. The leading arguments for and against this measure and some account of the difficulties to which it gave rise will be found in the articles, JAPAN and WAR OF THE NATIONS.

OFFICERS. Governor, William D. Stephens; Lieutenant-Governor, C. C. Young; Secretary of State, Frank C. Jordan; Controller, John S. Chambers; Treasurer, Friend Wm. Richardson; Attorney-General, U. S. Webb; Surveyor-General, W. S. Kingsbury; Adjutant-General, J. J. Borree; Superintendent Public Instruction, Will. C. Wood; Commissioner of Corporations, E. C. Belows; Librarian, Milton J. Ferguson; Legislative Counsel, Arthur P. Will; President Railroad Commission, Edwin O. Edgerton; Chairman Industrial Accident Commission, Will. J. French.

JUDICIARY. Supreme Court: Chief Justice, Frank M. Angellotte; Associate Justices, Lucien Shaw, William P. Lawlor, Curtis D. Wilbur, Thomas J. Lennon, Warren Olney, Jr., W. A. Sloane. See ANTHROPOLOGY.

CALIFORNIA, UNIVERSITY OF. A co-educational institution at Berkeley, Cal., founded in 1860. The number of students registered down to November 10th was given as approximately

11,151 (allowing for duplications), of whom 6239 were men and 4912 were women. The total registration for all departments connected with the university, including those which did not give degrees, was 37,480. The degree-giving departments were as follows: College of Letters and Science; College of Commerce; College of Agriculture; College of Mechanics; College of Mining; College of Civil Engineering; College of Chemistry; School of Jurisprudence; School of Architecture; Medical School; Hastings College of the Law; College of Dentistry; California College of Pharmacy; Junior College Department (Southern Branch, Los Angeles); Hooper Foundation for Medical Research. The departments that did not give degrees were as follows: Teachers' Curricula, Los Angeles; Los Angeles Medical Department; Summer Sessions, 1920; University Farm School, Davis; University Extension; Agriculture Extension. The teaching staff for the year 1920 numbered 852 and the administrative officers, 60. The library contained 420,525 volumes. President, David Prescott Barrows, Ph.D., LL.D. The number of new appointments of all classes including those for the replacement of persons resigning or declining appointment for the fiscal year 1919-20, or any portion of it, was 391. Of these, 3 were to full professorships, 7 to associate professorships, and 20 to assistant professorships. Total of the income-earning endowments, \$6,246,496; income for 1920 including State appropriations of \$2,722,904. \$5,844,464.

CALLAGHAN, Sir GEORGE ASTLEY. Admiral of the British fleet, died in London, England, November 23. As commander-in-chief of the Home Fleet and in other important capacities, he had had a distinguished career. He was born Dec. 21, 1852, and attained the rank of captain in 1894. After commanding in succession a number of battleships, he headed the naval brigade in China for the relief of the legations in Peking after the Boxer uprising in 1900. He was made rear-admiral of the home fleet in 1906 and he commanded the second division of the Mediterranean fleet in 1908-10 and of the home fleet in 1910-11. From 1911 to 1914, he was commander-in-chief of the home fleet and in 1917 he was made admiral of the fleet. To him was given credit for the efficiency of the great fleet when it was turned over to Lord Jellicoe, Aug. 4, 1914. He had brought the training and discipline during his long experience to a high point of perfection. In July, 1914, he was in command during the test mobilization of the fleets. After 1915, he was commander-in-chief of the Nore.

CAMBODIA. A native kingdom of Farther India constituting a French protectorate and forming part of French Indo-China. For area and population see the article FRENCH INDO-CHINA. The capital is Pnom-Penh, with a population of 62,255. The chief products are rice, betel, tobacco, pepper, spices, etc. In late years the growing of cotton has extended. Salt is found in commercial quantities. The exports include salt-fish, tobacco, cotton and rice.

CAMEROON. See KAMERUN.

CAMP FIRE GIRLS. An association founded by Dr. and Mrs. Luther H. Gulick in 1912 for the general purpose of promoting good health by outdoor life, encouraging economy, and effecting social improvement. It is an organized effort to find "romance, beauty, and adventure in everyday life." It seeks to make the homely task con-

tribute to the joy of every-day living. Camping out is a regular feature of the programme each year. A group, consisting of from six to 20 girls, with a "guardian," is called a Camp Fire. The guardian must be at least 18. Each member pays one dollar annual dues which goes toward the support of the National Headquarters at 31 E. 17th Street, New York, maintaining workers in the field, and supplying the guardians with monthly bulletins of instruction. Each Camp Fire and each Camp Fire Girl has a name and a symbol. Ceremonial meetings are held once a month. The official organ of the Camp Fire Girls, *Everygirl's Magazine*, is published monthly in New York. Miss Rowe Wright is editor.

Camp Fire Girls consider their personal health a sacred thing. During the past year more than 80,000 Camp Fire Girls carried out this point of the law by camping in the open for one or more weeks. The second point of the law, "Give service," was followed by 35,000 girls who maintained gardens, and 50,300 who contributed money and coöperated with the Red Cross. The Camp Fire programme is especially adaptable for girls' work in schools and churches, and it is now being adopted by various denominations as the official programme for the "between-Sundays" activities of the girls. In their Reconstruction Programme, endorsed by prominent educators throughout the country, they pledge themselves to conserve health and become sturdy and rugged, to create wealth for self and country by saving, and to reestablish the old-fashioned womanhood by making the home more beautiful and happy. Membership is approximately 150,000 divided into 7000 groups in every State and in 16 foreign countries.

CANADA. A British dominion in North America lying between the United States on the south and the Arctic Ocean on the north and extending from the Atlantic to the Pacific. Capital, Ottawa.

AREA AND POPULATION. The total area is 3,729,665 square miles, of which 125,745 are water area. It is divided into nine provinces and two territories. The total population at the census of June 1, 1911, was 7,206,643; estimated March 31, 1917, 8,361,000, of whom 105,998 were Indians and 3296 Eskimo. For details by provinces and territories and for distribution by race, color, and sex, see the *YEAR BOOK* for 1917. During the year ending Nov. 30, 1919, the immigrants numbered 114,768. (See below under *History*.) The cities over 100,000 in 1911 were Montreal (470,480); Toronto (376,538); Winnipeg (136,035— in 1916, 163,000); Vancouver (100,401). Ottawa in 1911 had a population of 87,062.

AGRICULTURE. The total value of the fields was estimated at \$1,453,000. The tables on opposite page taken from *Statesman's Year Book* for 1920, give the estimates of crops by provinces in 1919.

Canada's harvest for 1920 was estimated at 25,000,000 tons of hay and corn and 1,250,000,000 bushels of other field crops. The average price of 1920 wheat was estimated at \$2 per bushel. The field crops of Canada represented about \$170 per head of population. The wool yield was placed at 18,000,000 pounds, as compared with 17,300,000 pounds in 1919. The fisheries of Canada were placed at over \$40,000,000, and the forest products exported at \$80,600,000.

The values of the farm produce of Canada for 1920 (with the corresponding figures for 1919 in

1919	Wheat		Barley		Oats	
	Acres	Bushels	Acres	Bushels	Acres	Bushels
Ontario	980,644	20,982,000	569,183	13,803,000	2,674,341	76,219,000
Quebec	251,089	4,394,000	234,892	5,287,000	2,141,107	61,022,000
Nova Scotia	28,931	637,000	13,894	389,000	158,838	5,798,000
New Brunswick	35,641	748,000	10,662	269,000	305,484	9,852,000
Manitoba	2,880,301	43,206,000	893,947	18,326,000	1,847,267	64,193,000
P. E. Island	35,595	899,000	5,636	178,000	174,937	6,779,000
British Columbia	59,270	1,431,000	10,497	336,000	90,042	4,232,000
Alberta	4,282,503	26,131,000	414,212	10,562,000	1,767,372	65,725,000
Saskatchewan	10,587,363	97,933,000	492,586	9,236,000	4,837,747	117,316,000
Total Canada	19,141,337	196,361,000	2,645,509	58,336,000	14,997,135	411,136,000

1919	Potatoes		Flax		Hay and Clover	
	Acres	Bushels	Acres	Bushels	Acres	Bushels
Ontario	157,286	16,363,000	13,717	206,000	8,508,266	5,728,000
Quebec	815,590	57,280,000	11,384	128,000	4,299,360	6,449,000
Nova Scotia	62,060	9,992,000			678,357	1,425,000
New Brunswick	75,573	13,489,000			786,175	1,111,000
Manitoba	42,000	6,933,000	57,379	631,000	260,378	391,200
P. E. Island	36,234	5,654,000			237,883	479,000
British Columbia	20,294	3,450,000			126,251	189,000
Alberta	45,848	8,241,000	80,690	222,000	433,296	476,600
Saskatchewan	66,176	11,250,000	929,945	5,580,000	265,417	279,000
Total Canada	821,061	181,952,200	1,093,115	6,767,000	10,595,383	16,527,800

parentheses) were given as follows: Wheat, \$420,636,000 (\$360,573,000); oats, \$394,112,000 (\$317,097,000); barley, \$97,513,226 (\$77,162,700); rye, \$17,680,000 (\$14,240,000); peas, \$10,227,000 (\$9,739,300); beans, \$7,214,520 (\$6,214,800); buckwheat, \$16,944,000 (\$15,831,000); mixed grains, \$49,883,522 (\$37,775,400); flax, \$23,473,200 (\$22,609,500); corn, \$27,326,000 (\$22,080,000); potatoes, \$148,380,000 (\$118,894,200); carrots, turnips, and other vegetables, \$59,827,600 (\$54,958,700); hay and clover, \$389,606,200 (\$338,713,200); fodder corn, \$51,162,200 (\$34,179,500); sugar beets, \$3,200,000 (\$2,606,000); alfalfa, \$12,504,330 (\$10,800,200); cheese, \$41,950,000 (\$39,457,358); butter, \$45,376,200 (\$41,845,164); live stock, \$87,620,200 (\$83,472,000). See AGRICULTURE.

FOREST PRODUCTS. The area of the land bearing timber of commercial value is estimated at 200,000,000 to 300,000,000 acres distributed among the provinces as follows: Quebec, 100,000,000; Ontario, 70,000,000; British Columbia, 50,000,000; Manitoba, Saskatchewan, and Alberta, 11,000,000; New Brunswick, 9,000,000; Nova Scotia, 5,000,000. During the calendar year 1918 the total value of forest products was estimated at \$190,000,000. In 1918-19 the surplus for export in the wood pulp industry was valued at \$34,706,771, mainly to the United States and Great Britain. The capital invested in the industry in that year was \$180,017,000. There were 3086 mills, employing 60,000 persons.

MINERALS. The principal mining districts are in Nova Scotia, British Columbia, Quebec, Northern and Western Ontario, Alberta, and the Yukon Territory. In 1918 the mineral production was valued at \$210,204,970, distributed as follows according to the *Statesman's Year Book* for 1920:

Product	Quantity	1918 Value ^a
METALLIC		Dols.
Copper	lbs. 118,415,829	29,163,450
Gold	ozs. 710.5-6	11,887,875
Pig iron	tons of 2,000 lbs. 1,194,000	33,000,000
Lead	lbs. 43,846,260	4,055,779
Nickel	lbs. 92,076,034	36,830,414
Silver	ozs. 21,284,607	20,597,540
Other metallic products		7,028,350
Total		145,358,408
Less pig iron from imported ore	tons of 2,000 lbs. 1,146,556	31,795,297
Total metallic value		113,563,111

Product	Quantity	1918 Value ^a
NON-METALLIC		Dols.
Asbestos and asbestic	tons of 2,000 lbs. 158,196	8,970,779
Coal	do. 14,979,213	55,752,671
Gypsum	do. 152,287	823,006
Natural gas	m. cu. ft. 20,140,315	4,370,622
Petroleum	bbls. 304,741	866,554
Pyrites	tons of 2,000 lbs. 413,698	1,688,991
Salt	do. 181,727	1,285,039
Cement	bbls. 3,591,481	7,076,503
Clay products		4,599,835
Lime	bush. 6,270,666	1,856,819
Stone		2,873,175
Miscellaneous non-metallic		6,477,865
Total non-metallic		96,641,859
Grand total		210,204,970

^a The metals copper, lead, nickel, and silver, are, for statistical and comparative purposes, valued at the final average value of the refined metal. Pig-iron is valued at the furnace, non-metallic products at the mine or point of shipment, and structural material and clay products at the point of shipment.

The value of Canada's mineral production in 1920 is estimated at about \$200,000,000 compared with \$176,686,390 the year before. The gold output was valued at \$18,000,000. Production of other minerals follows: Silver, 13,500,000 ounces; copper, 82,500,000 pounds; nickel, 61,500,000 pounds; lead, 35,000,000 pounds; zinc, 42,000,000 pounds; pig iron, 1,000,000 short tons; steel ingots and direct steel castings, 1,220,000 short tons.

COMMERCE. The following information in regard to Canada's foreign trade was supplied by the United States Bureau of Foreign and Domestic Commerce: Canada's foreign trade in the 12 months ending Dec. 31, 1919, showed an increase over that of the previous year both in imports and exports. Total imports in 1919 were \$941,007,700, as compared with \$910,149,140 in 1918, an increase of \$30,858,560, or 3.39 per cent. The imports in 1913 amounted to only \$659,904,116, or \$281,103,584 less than in 1919, showing an increase of 42.78 per cent for the latter year, as compared with 1913. Total exports for 1919 were \$1,294,920,372, as compared with \$1,243,729,772 in 1918, an increase of \$51,190,600, or 3.91 per cent. The exports in 1913 amounted to only \$460,519,246, or \$834,401,126 less than in 1919, showing an increase of 181.07 per cent for the latter year as compared with 1913. There

was a substantial balance of trade in Canada's favor in the year 1919, exports amounting to \$353,912,672 over imports. In the year 1913 there was an unfavorable balance amounting to \$199,384,870. It is to be borne in mind that the great rise in prices during the past six years is responsible for a considerable part of the increase shown both in imports and exports of the year 1919 as compared with the figures of 1913, and the increase in quantities has not been as great as the figures of values would seem to indicate.

The following statement shows by percentages how Canada's foreign trade was distributed between the different countries:

Country	Imports			Exports		
	1913	1918	1919	1913	1918	1919
United States	64.6	81.4	78.8	37.9	36.1	36.6
Great Britain	21.2	8.0	9.3	49.8	47.4	42.5
British dominions and colonies	3.2	5.7	4.5	5.3	4.4	6.1
Other countries	11.0	4.9	7.5	7.0	12.1	14.8

The following table gives the import and export trade of Canada for the calendar years 1913, 1918, and 1919. Imports are classified as dutiable and free, and are herewith quoted from the

	1918-19	1919-20
Mdse. entered for consumption:		
Free	\$389,947,715	\$370,872,966
Dutiable	526,481,620	693,643,211
Total imports	916,429,335	1,064,516,177
Domestic mdse. exported	1,216,443,806	1,239,492,098
Foreign mdse. reexported	52,321,479	47,166,611
Grand total Canadian trade	\$2,185,194,620	\$2,351,174,886

The detailed export figures showed a great increase in the value of the agricultural food products, animals and animal products and wood and paper products sent out of the Dominion in 1919-

20, as compared with 1918-19, these groups showing respective gains of \$121,286,043, \$69,084,157, and \$59,322,165. On the dutiable goods imported in 1919-20 a total of \$187,520,613 in duties was

Classification	Imports		Exports		Reexports	
	1918-19	1919-20	1918-19	1919-20	1918-19	1919-20
Agricultural and vegetable products, mainly foods.	\$107,089,558	\$166,573,788	\$262,033,526	\$383,319,569	\$22,828,409	\$4,890,000
Agricultural and vegetable products, other than foods	51,280,524	76,856,969	26,946,216	32,804,403	2,894,675	1,531,943
Animals and animal products	42,356,616	94,920,640	244,990,826	314,074,983	9,364,079	6,565,660
Fibres, textiles, and textile products	175,025,208	224,809,166	28,641,666	34,028,314	1,834,594	3,923,765
Chemicals and chemical products	35,955,648	30,727,990	55,262,478	21,147,797	1,328,982	3,555,024
Iron and steel, and manufactures of	190,864,593	184,851,196	82,855,193	82,161,003	6,179,760	18,058,937
Ores, metals, and metal manufactures, other than iron and steel	40,014,247	53,597,285	80,655,420	56,145,291	979,742	2,597,839
Non-metallic minerals and products	132,157,850	119,620,498	25,339,368	29,222,348	8,144,217	589,921
Wood, wood products, paper, and manufactures	35,782,967	43,187,910	154,685,098	213,957,263	308,581	532,700
Miscellaneous	105,902,124	69,370,735	255,084,015	72,631,127	3,458,440	4,920,822
Total	\$916,429,335	\$1,064,516,177	\$1,216,443,806	\$1,239,492,098	\$52,321,479	\$47,166,611

official Canadian Trade and Commerce statistics with the duty collected:

Items	1913	1918	1919
IMPORTS			
Dutiable goods ..	\$438,539,132	\$511,105,417	\$607,452,288
Free goods ..	221,364,984	399,043,723	333,555,412
Total ..	659,004,116	910,149,140	941,007,700
Duty collected ..	113,881,578	154,849,472	168,920,659
EXPORTS			
Canadian ..	436,218,067	1,199,636,463	1,241,085,606
Foreign ..	24,301,179	44,093,309	55,834,766
Total ..	\$460,519,246	\$1,243,729,772	\$1,294,920,372

Figures for the fiscal year ended March 31, 1920, indicated an increase of \$165,980,266 in the grand total of Canada's foreign trade compared with the preceding twelvemonth. Imports advanced by \$148,086,842 and exports by \$23,048,292, but reexports fell off in value by \$5,154,868, as the following summary shows:

collected, or \$29,474,280 more than in the preceding year.

By general classes Canada's imports and domestic and foreign exports during the past two years aggregated:

The value of the Canadian trade by countries for the fiscal year compared with the preceding one was as follows:

The following table shows the expansion of the foreign trade since 1913-14 for trade years ending March 31:

	1913-14	1919-20
Exports (including reexports)	\$455,437,224	\$1,286,658,709
Imports	618,457,144	1,064,516,169
Total foreign trade ..	\$1,073,894,368	\$2,351,174,878
Foreign trade per capita ..	143	273

It is to be noted that in 1919-20 the total exports were not only 182 per cent greater than they were in 1913-14, but were valued at \$212,764,341 more than the total imports and exports during the latter year. Allowance should, of course, be made for the rise in prices but increase

Countries	Imports for fiscal year—		Exports for fiscal year—	
	1919	1920	1919	1920
United Kingdom	\$73,024,016	\$126,269,274	\$540,750,977	\$489,151,806
Australia	4,963,446	1,369,218	14,019,629	11,415,623
British East Indies	15,223,434	16,235,738	3,831,741	6,762,259
British Guiana	6,747,072	7,412,931	2,646,169	3,109,381
British South Africa	1,300,259	676,070	11,992,299	8,649,756
British West Indies	8,437,825	12,093,144	10,200,582	10,868,693
Hongkong	2,121,909	3,194,959	995,116	1,343,867
Newfoundland	3,098,834	2,139,614	11,325,618	16,175,443
New Zealand	7,885,436	3,415,096	7,227,509	6,987,008
Other British Empire	888,207	1,267,322	3,170,149	7,323,323
Argentine Republic	1,139,267	3,057,269	4,603,130	6,126,457
Belgium	6,270	911,407	950,318	28,463,855
Brazil	1,156,832	1,973,768	4,088,534	2,703,488
China	1,954,466	1,201,579	2,856,933	6,659,805
Cuba	3,049,953	17,585,528	5,035,975	6,329,783
France	3,641,244	10,604,357	96,103,142	61,106,938
Greece	83	700,899	16,902	29,588,984
Italy	555,112	999,040	13,181,514	16,961,312
Japan	13,618,122	13,635,680	12,245,439	7,732,514
Netherlands	495,409	2,222,434	198,985	5,653,218
United States	750,199,879	802,102,187	454,873,170	464,029,014
Other foreign countries	20,238,277	35,448,655	17,129,975	42,349,571

in the value of exports to the extent of 182 per cent far exceeds the rise in prices.

Comparing the returns by important groups the trade during the foregoing two years was made up as follows (figures are for merchandise only):

Countries	Imports from		Exports to ^a	
	1913-14	1919-20	1913-14	1919-20
United Kingdom	\$132,070,362	\$126,269,274	\$222,322,292	\$495,961,867
Other parts of British Empire	22,456,440	47,903,079	23,709,829	73,719,192
United States ^b	395,565,328	801,632,849	176,948,299	501,128,368
Other foreign countries	68,365,014	88,710,967	32,456,804	215,849,282
Total	\$618,457,144	\$1,064,516,169	\$455,437,224	\$1,286,658,700

^a Includes re-exports.

^b Exclusive of Alaska and insular possessions.

Evidence of the expanding nature of Canada's foreign trade is to be seen in the fact that trade was conducted with a larger number of countries and on a much larger scale generally than in 1913-14.

FINANCE. The estimated expenditure for the year ending March 31, 1920, was \$437,679,072, and the consolidated fund revenue was \$312,946,747. The debt on Oct. 31, 1918, was \$1,749,332,000. Down to that date the total war expenditure of the country was estimated at \$1,530,000,000.

The first budget introduced by the new finance minister, Sir Henry Drayton, provided for a series of special taxes whose return was expected to amount to about \$70,000,000. The reason given for imposing them was that the government had renounced its policy of borrowing and decided that henceforth the country must pay its way. On the other hand, certain sources of income were closed. The 7½ per cent extra customs' duty of the war on certain articles was removed; exemptions under the business profits tax were increased from 7 per cent to 10 per cent; and the duty on moving picture films was repealed. The taxes, however, more than offset this decrease. The tax most discussed because it aroused the most discontent was the so-called luxuries tax. Originally this ranged from 10 per cent to 50 per cent on certain goods specified as luxuries. The tax was imposed on the selling price whether the goods were made in Canada or not if the selling price exceeded a certain amount. Among these articles were textiles, boots and shoes, gold and silver articles, and sporting goods. Thus on boots and shoes, the tax applied to any amount over \$9 a pair. On suits

and dresses on any amount over \$45 and in each case the tax was 10 per cent. The objection to this was that it burdened the buyer of necessities and it was argued that the principle of the United States luxury tax was better, the tax of the United States being paid on the cost of goods

above a certain limit and not on the selling price. Certain modified proposals were made in the summer time with a view to meeting the objection. The tax of 1 per cent on all sales of manufacturers, importers, wholesalers, etc., was retained and continued to apply to all articles except certain specified ones, including coal. It was criticized in that it tended to be multiplied before the goods passed to the consumer. The heavy tax on liquors, the 2 cent tax on stock transfers, and the 5 per cent addition to the tax on incomes in excess of \$5000 were not changed.

RAILWAYS. The total length of railways in June, 1918, was 38,879 miles distributed as follows: Ontario, 11,057; Quebec, 4791; Manitoba, 4168; Saskatchewan, 6162; Alberta, 4273; British Columbia, 4247; New Brunswick, 1959; Nova Scotia, 1428; Prince Edward's Island, 279; and Yukon, 102. The government railways in operation, 1917-18, had a total length of 4408 miles.

Railway construction in the Dominion of Canada during 1920 aggregated 305.39 miles of new lines and 31.60 miles of second track, or a total of 336.99. This amount, it may be noted, was but very little less than the mileage of new construction in the United States although less than the 442.46 miles of 1919. This was in pursuance of the policy of expansion which the Canadian roads have been following in tapping and building up new sections of the country. Canada, as regards settlement and resources, was in many ways undeveloped, so that from 1906 to 1913 there was active railway construction throughout the Dominion. In 1914 with the war this began to decline reaching a minimum in 1918. The figures for 1919 and 1920 however were considered as indicating a resumption of

railway building for Canada. Much of the new construction was in the form of branches connecting with the trunk lines.

Late in the year the government of the Province of Manitoba granted authority to the Canadian National Railways to undertake immediately a survey for a new line from The Pas to the Flin Flon mining area, about 90 miles northward. A new railroad for Quebec also was announced late in the year, to be 120 miles long, from Chicoutimi to St. Felicien, via the north side of Lake St. John. A contract was signed between the government of the Province of Quebec and the Quebec & Chibougamou Railway Co. providing for the new line which will run through timbered country. A large amount of the material had been contracted for and the road was to be completed in two years.

DEFENSE. Before the war the permanent force was 3500 and the active militia 68,000. During the war Canada provided 628,964 men, of whom 465,984 enlisted voluntarily, the remainder being added under the Military Service act, which went into effect in the winter of 1916-17. The Canadian army during the war consisted of four divisions and a cavalry brigade in France, in addition to garrisons in the Dominion and the West Indies and the detachments sent to North Russia and Serbia. The casualties in the Canadian force during the war were placed at 213,208 of whom 55,205 were killed or died of wounds or disease. Demobilization began in December, 1918, and was nearly completed at the beginning of 1920. In the latter year measures were taken toward the restoration of the same system as had existed before the war. See NAVAL PROGRESS.

GOVERNMENT. The executive power is normally vested in the King, but is exercised in his name by the Governor-General who acts through a responsible ministry. The legislative power is vested in a Parliament of two houses, the Senate and the House of Commons. The senators are nominated for life and the members of the House of Commons are elected by direct suffrage for five years. The Senate has 96 members and the House of Commons had at the beginning of 1920, 234 members as follows: 82 for Ontario, 65 for Quebec, 16 for Nova Scotia, 11 for New Brunswick, 15 for Manitoba, 13 for British Columbia, 3 for Prince Edward Island, 16 for Saskatchewan, 12 for Alberta, and 1 for the Yukon Territory. As the result of the election of December, 1917, the Unionists in the House of Commons numbered 151 and the opposition 81. Governor-General in 1920, the Duke of Devonshire.

The ministry after the fall of the Borden cabinet (see below) was constituted as follows: Secretary of State for External Affairs (First Minister), Right Hon. Arthur Meighen; Minister of Trade and Commerce, Right Hon. Sir George E. Foster; Minister of Finance, Hon. Sir Henry L. Drayton; Minister of Justice, Right Hon. C. J. Doherty; Minister of Labor, Hon. Gideon Robertson; Minister of Railways and Canals, Hon. J. D. Reid; Minister of Soldiers' Civil Re-establishment, Hon. Sir James A. Lougheed; Secretary of State of Canada (acting), Right Hon. Arthur L. Sifton; Postmaster-General, Hon. P. E. Blondin; Minister of the Interior and Minister of Mines, Hon. Sir James A. Lougheed; Minister of Marine and Fisheries and Minister of the Naval Service, Hon. C. C. Ballantyne; Minister of Customs and Inland Revenue,

Hon. R. W. Wiggmore; Minister of Immigration, Colonization, and Health, and President of the Privy Council, Hon. J. A. Calder; Minister of Militia and Defense, Hon. Hugh Guthrie; Minister of Agriculture, Hon. Simon F. Tolmie; Minister of Public Works, Hon. F. B. McCurdy; Member of Privy Council without portfolio, Edgar K. Spinney.

HISTORY

PARLIAMENT. The parliamentary session opened February 26th. Among the important questions before it was that of the future naval policy. A report on that subject had been made by Admiral Jellicoe which included a plan providing for complete local control while making the Canadian navy an integral part of the imperial naval force. English officers were to hold the high commands in it until the Canadians had received the requisite training. It was decided after some vigorous discussion that at present owing to the financial burdens and to uncertainty as to imperial naval policy, Canada would not embark upon an expensive naval programme. It was agreed to maintain at Canadian expense however, a cruiser, two destroyers, and two submarines, which were supplied by the British government (June 15th). Meanwhile, the strength of the government was indicated by the result of a contest on March 10 in which the opposition tried to drive the ministry from power by the proposal of an amendment to the speech from the throne. Parliament expressed confidence in the ministry by a majority of only 34.

MINISTERIAL CRISIS. Sir Robert Borden resigned as Prime Minister at the beginning of July and was succeeded by Mr. Arthur Meighen. By-elections were held for the Federal Parliament on September 20th in St. John, New Brunswick, and resulted in a large majority for the ministerial candidates. The provincial elections were held in New Brunswick on October 9th and according to the preliminary returns the Liberal government lost three of its representatives. Two members of the cabinet were defeated, though the Prime Minister, Mr. Foster, was returned. In New Brunswick and two other provinces, namely Ontario and Manitoba, the group system prevails, that is to say, the largest party in each house of the provincial parliament has not a majority over the other groups. Many believed that the Federal Parliament itself would before long be divided into groups in the same manner.

ELECTIONS. A by-election in Ontario in December resulted in the defeat of the government candidates. Another in British Columbia resulted favorably for the government. General elections in British Columbia, December 1, indicated the desire for a change of ministry, for although the Liberals (government) were not decisively defeated, the opposition to them was strengthened.

PROHIBITION. A referendum in British Columbia on October 26th resulted in a vote in favor of a system of public liquor dispensaries under government control, a majority of over 30,000 being against the continuation of the existing system, which allowed importation for private use. In Alberta, Manitoba, Nova Scotia, and Saskatchewan, which had already adopted provincial prohibition, a referendum was taken on the question of prohibiting the importation of liquor on October 25th, and all four provinces voted for the prohibition. This would make all these provinces

completely "dry" as soon as the Federal Order in Council should go into effect.

PROPOSED AMENDMENT TO THE CONSTITUTION. In the latter part of the year there was an increasing demand for the right of Canada to amend her own constitution without applying to the King and his advisers. In this Quebec did not participate because her language and civil law rights would be guaranteed against aggression so long as the consent of the British Parliament was required for amendments. Outside Quebec, however, the movement was popular and Parliament passed a resolution calling upon the imperial Parliament to amend the confederation act known as the British North American Act, in such a way as to place Canadian legislation on an extra-territorial basis. It was argued that it was absurd for a nation that had an independent status to be compelled to ask the Parliament of another country for permission to amend its constitution. Connected with this movement was the demand that Canada should have a minister with full powers representing her in the United States. Objection was raised on the ground of possible difficulty from confusion of his functions with those of the British Ambassador. The Liberal opposition attacked the measure from this point of view. The government argued that inasmuch as three-fourths of the work done by the British Embassy at Washington related to Canada and as thus far it had not engaged persons especially familiar with Canadian affairs, the time had come when Canada should have its own direct representative.

IMMIGRATION. Further measures were taken in December toward restricting immigration of the working classes from other countries and an order was adopted December 1st, providing that no immigrant should enter unless he possessed \$250 in his own right, the amount previously required being \$50; and if accompanied by his family those over 18 years of age must have the equivalent of \$125 apiece, and each member between the age of five and 15 must have \$50. The order went into effect December 15th on the American boundary and was to go into effect January 1st at the ocean ports.

CANADA AND THE LEAGUE. The belief in the United States that Canada as a member of the League would always vote with Great Britain was not shared by the general opinion in Canada itself. It was pointed out that the representatives of Canada in the Assembly of the League would be expected to express opinion in Canada, rather than in the British Empire. During the meetings of the Geneva Assembly, moreover, the Canadian representation showed an independent attitude and ranged itself generally with the more liberal element. In fact the Canadian delegate, Mr. Doherty, drew general attention by his criticism of the European diplomacy that had preceded the war and he emphasized the necessity of a new spirit in international affairs. He gave it to be understood that the new world representatives did not intend to let themselves be dragged at the heels of European diplomats whose policy in the past had brought on the war.

OTHER EVENTS. On May 10th it was officially announced that in the future Canada would be represented at Washington by her own resident minister. On June 9th representatives of Canada and of the West Indies in conference at Ottawa agreed upon a system of reciprocity in customs duties and upon a plan for the improvement

of shipping facilities between the two parties. A tariff commission under the Ministry of Finance toward the close of the year was taking evidence throughout the country. The main argument that the protectionists were using was based on trade figures, showing that the imports from the United States amounted to \$900,000,000 as against \$500,000,000 in exports during the year. The Prime Minister, Mr. Arthur Meighen, on October 26th declared that the tariff issue would be put before the electors in plain terms in order that they might decide between the government and its opponents. The discovery of rich oil lands near Fort Norman on the border of the Arctic Circle and over 1000 miles due north of Edmonton was announced toward the close of the year. A crime that drew much attention during the closing weeks of the year was the killing of the proprietor of a hotel at Sandwich, Ontario, by a Methodist minister who had been licensed as an inspector after criticizing the failure of the government to enforce prohibition. The coroner decided that it was done in self-defense. The affair aroused much discussion over the question of enforcement. See **ANTHROPOLOGY; EXPLORATION.**

CANALS. The discussion of new projects rather than actual construction prevailed in 1920. The Great Lakes Waterway was vigorously argued, work was done on the Welland Canal of Canada, and other enterprises in connection with schemes of internal waterways were put forward especially in view of the increased freight rates on the railways.

ST. LAWRENCE WATERWAY. During 1920 the engineering investigation of the proposed Great Lakes to the sea deep waterway provided for in the United States River and Harbor Act was under way. This project required considerable construction as a 35-foot waterway was contemplated and the joint commission headed by Col. W. P. Wooton, Corps of Engineers, United States army, for the United States, and W. P. Bowden, Chief Engineer of the Department of Railways and Canals, for Canada, was engaged in an engineering inquiry as to the possibilities and difficulties and cost of such a waterway. This plan was to be completed in the spring of 1921. In the mean time the plan was vigorously advocated by commercial and other agencies interested and also opposed in other quarters. A notable address on the engineering requirements of the proposed waterway was delivered before the Western Society of Engineers by Maj. John C. Lee, Corps of Engineers, United States army.

ILLINOIS STATE WATERWAY. After the passage of the Illinois Deep Waterway Act of 1919 providing for the construction of a canal for barge navigation between the Chicago Drainage Canal at Lockport and the Illinois River at Utica (see **YEAR BOOK** for 1919), the State of Illinois submitted plans prepared by its new Division of Waterways to the Federal government. These were approved by the Secretary of War and the Chief of Engineers, United States army, and application was also made for permission to develop water power under the terms of the Water Power Act. Proposals were invited for the construction of various parts of the project and in October, 1920, the first contract for the lock at Marseilles, Ill., was awarded for \$1,373,115, exclusive of gates, valves, and operating machinery. The distance to be traversed by the new waterway is about 60 miles with a difference

in water elevation of about 123 feet for which five locks of from 41 to 16 feet lift are required. The canal will have 8 feet of water in earth and 10 feet in rock sections, and the locks were designed to be 110 x 600 feet with 14 feet of water on the sills at low water so as to provide for a future deepening of the waterway to 14 feet. Barge fleets with 7500 tons of cargo are to be accommodated as this practice had been found most useful on the Ohio River. The new project would make possible the removal of the existing dams and locks in the lower part of the Illinois River, affording a 9-foot open channel from La Salle to the Mississippi River in addition to the new development. For the five locks there were to be required three new dams, and below an existing dam forming a diversion channel one of the locks was to be placed. All of the locks except that at Lockport where the Sanitary District of Chicago had a hydro-electric plant, were to have power houses. The dams were to be of the gravity type built of concrete with movable crests formed by Taintor gates to afford ample flow for flood waters. The traffic capacity of the new waterway was estimated at 60,000,000 tons annually and its completion was anticipated by 1924. The estimated cost was placed at \$20,000,000 with \$8,000,000 additional for water. See paper read before Western Society of Engineers and *Engineering News-Record*, page 1095, Dec. 2, 1920, vol. LXXXV, no. 23.

NEW YORK BARGE CANAL. This great undertaking which was 15 years in construction and required with its various adjuncts and appurtenances over \$180,000,000 in 1920 again failed to realize expectations or to accommodate an amount of traffic commensurate with the outlay. Construction progress continued on the various terminal facilities including a huge grain elevator in Gowanus Bay, New York harbor. While the Barge Canal since its construction had become adequate to handle a large amount of commerce and thus aid or possibly compete with the railways, yet completed as it was about the time of the world war its facilities never had been utilized to any considerable extent. It was commandeered by the government and a small fleet of modern boats was built and operated by the Emergency Fleet Corporation but they were not adequate in number and only served to discourage private construction and operation. In 1919 the total traffic on the New York Barge Canal System was only 1,238,844 tons which was 5,000,000 tons less than the amount carried by the old Erie Canal in any year between 1868 and 1884 and less than one-third the traffic from the latter date to the beginning of reconstruction in 1903. In 1920 it was estimated that between 20,000,000 and 25,000,000 tons per season could be handled and with the ceasing of government control private transportation and manufacturing interests located on the banks began actively to consider a fuller utilization of its facilities. One company in particular was organized during the year to start in the season of 1921 with some 25 oil-burning steamers and 75 750-ton steel barges thus added more than 1,000,000 tons annually to the carrying capacity of the canal.

CANALS AT SAULT STE. MARIE. The United States Canal at Sault Ste. Marie, Mich., was opened April 19th and closed Dec. 26, 1920; thus making its season 252 days. The Canadian Canal was opened April 23 and closed Dec. 23, 1920; with a season of 244 days.

There was an increased commerce through the canals in 1920 over the previous year and the comparative statement of lake commerce through both canals at Sault Ste. Marie, Mich., and Ontario for the seasons of 1919 and 1920 is shown below:

Items	Total Season 1919	Total Traffic for Season 1920	P. ct.
Vessels:			
Steamers, No.	14,866	16,336	+ 10
Sailing, No.	1,218	1,354	+ 11
Unregistered, No. ..	1,503	1,157	- 23
Total	17,587	18,847	+ 7
Lockages, No.	12,302	13,193	+ 7
Tonnage:			
Registered, net	50,089,090	58,194,083	+ 16
* Freight, tons	68,235,542	79,282,496	+ 16
Passengers, No.	56,992	68,451	+ 20
Lumber, M. ft. B.M. .	244,426	192,854	- 21
Flour, bbls.	8,087,554	7,477,533	- 8
Wheat, bush.	113,734,848	143,456,487	+ 26
Grain, bush.	52,734,845	51,630,135	- 2
* Copper, tons	58,409	51,545	- 12
* Iron ore, tons	46,922,792	56,780,498	+ 21
* Mfd. and pig irons ..	117,713	76,194	- 35
* Coal, soft, tons	11,461,962	12,096,993	+ 6
* Coal, hard, tons	2,412,989	2,059,266	- 15
* Salt, tons	93,893	99,208	+ 6
* Oil, tons	287,023	353,489	+ 23
* Stone, tons	371,170	563,271	+ 52
* Genl. mdse., tons ...	542,178	556,110	+ 3

* Short tons.

See PANAMA CANAL.

CANARY ISLANDS. A group of islands belonging to Spain, situated off the northwest coast of Africa. Area, 2808 square miles. The population was estimated Dec. 31, 1918, at 513,959; census of Dec. 31, 1910, 444,016. The capital, Santa Cruz de Tenerife, had a population in 1910 of 63,004; estimated Dec. 31, 1918, 72,871. Another large city is Las Palmas with a population estimated, Dec. 31, 1918, at 69,270. The leading exports are tomatoes, potatoes, bananas, and wheat.

CANCER. Cancer is being cured to-day in large numbers, although in a very small percentage of cancer victims (for the diffusion of the disease is enormous), by the knife, by radium, by the x-rays, by electrical cautery, and even by chemical caustics. These remedies are in a sense competitive although each has a definite field of application. The idea of combining or alternating them is of course by no means new but the more recent literature shows that the combined methods are beginning to be systematically applied, so that we shall know before long whether such combination means an advance in cancer treatment. The scarcity of radium with the fact that its ownership is concentrated in the hands of the few makes the problem of combined treatment difficult at the start. It is rare to find a medical man who is equally versed in the technics of application of all of these remedies, and it is in fact a foregone conclusion that the combined methods make advisable the coöperation of a number of specialists. The most eminent technicians are so wedded to their specialties that they are apt to underrate the work of their colleagues. The most accomplished x-ray specialists claim that they can equal any results produced by radium, while some of the radium experts claim that they have supplanted the use of the knife in cancer at least in certain localities such as the uterus. To illustrate the simultaneous application of several resources let us take the case of a malignant growth involving both the



CANAL BOATS AT PITTSFORD DOCK



State Engineer and Surveyor's Dept.

CANAL BOATS AT TONAWANDA TERMINAL

VIEWS OF NEW YORK STATE BARGE CANAL

△

soft and bony structures of the face, of the type deemed inoperable at the start. The growth consists largely of tissues already degenerated. To excise these with the knife exposes the patient to a number of risks, not the least of which is the danger of spreading the disease through the severed blood-vessels. Hence some form of electrical head is applied in such intensity that the degenerated tissues are "cooked" to use a familiar expression. Within a short time the "cooked" tissues separate and leave a healing cavity. Early in the treatment and perhaps before the application of heat, the x-ray has been used intensively over the tumor and its contiguous tissues with especial reference to the absorbent vessels, which bear the cancer cells to the nearest glands or lymph nodes. It has been proved that the rays are able to contract the channels of the absorbents in such a manner as to make this transportation difficult or impossible. But some of the bony tissue, as the upper or lower jaw, has become involved in the disease and can be removed only by cutting instruments. This is done at the most opportune time and as soon as possible. Thus far the periphery or growing part of the tumors which surrounds the degenerated area has not been attacked and now radium is in demand. Tubes of the latter are inserted in these regions in such a manner as to expose all of the growing tumor tissue to the penetration of the rays. Within a short time the several wounds have healed with a smooth scar and if the technic has been perfect there is little chance that the growth will reappear in the original area. In case it should start up anew at some point radium or one of the other local methods of treatment is called upon. The patient is kept for a long time under the influence of the x-rays to prevent glandular recurrence and if such recurrence appear it may be treated by single or combined methods. Appearance of the disease at a distance through transportation by the blood circulation is usually beyond the possibility of cure and we have but one resource here—the x-rays. In some of these secondary growths which are most accessible to the rays some remarkable results have been obtained. The disease has been arrested and the patient seemingly cured. Such results have been obtained for example in secondary growths of the spine. In inoperable cancer of the breast the use of chemical caustics have recently been revived for the destruction of the degenerated cancer tissue. The patient is anesthetized and by means of caustic potash the tissue is rapidly destroyed in much the same fashion as when electric heat is used. The large cavity which may form heals slowly with a good scar, although skin grafting is sometimes necessary.

The intense activity of research in the province of malignant disease can hardly help but bear fruit, but owing to the real or apparent continuous increase in the diffusion of the disease, the benefits have not yet been realized by a reduction of the mortality. Rapid increase of cancer in Brazil has led to agitation intended to make the disease reportable and to isolate the victims as in the case of leprosy. Cancer is not known to be contagious and in the case of leprosy contagion has always been difficult to prove; but since segregation has caused an arrest in the spread of leprosy it is thought wise to test the measure on the other disease. As far as can be learned no actual steps in this direction have

yet been taken. The idea would be quite impracticable in any one of the old civilized countries where cancer has abounded for years but in a country like Brazil with a large aboriginal and primitive population hitherto relatively immune to the disease (it exists in the cities and amid the white civilized communities there as elsewhere in the world) the general diffusion of the malady suggests some drastic measure and from analogy of other racial plagues, segregation seems worth trying.

We are learning more and more that whatever else cancer may be it tends to result from persistent irritation of any kind. It has not always been easy to connect definite irritants with the disease, but of recent years it has become possible to associate cancer within the mouth and throat with multiple irritation. Thus in London a surprising number of victims present the effects of several of the following types of irritation: tobacco addiction—the excessive smoking of cigars and pipes; the use of very hot foods and the tendency to increase the temperature more and more as one becomes tolerant; the drinking of very hot tea and coffee; alcoholic abuse; the excessive use of table salt which acts unfavorably on the mucous secretion; the history and often actual lesions or scars of the disease syphilis, which is present in from 20 to 100 per cent of material treated by individual throat specialists and the presence of infected mouth and pyorrhœa. In not every region of the body is there such cumulative evidence of irritation. But another great truth concerning the immediate cause of cancer is seen in the demonstration of a preceding chronic inflammation, which implies the existence of some irritant as yet not recognizable. Thus in cancer of the breast pathologists now claim to find evidence in practically all cases of this pre-existence of inflammation, although in many cases we cannot predicate the cause. In many women the inflammation is the sequel of lactation, but there is nothing to account for this pre-cancerous condition in women who have never borne children.

The rapid increase of cancer of the stomach is in part due to the same factors which cause the disease in the throat, such as swallowing very hot food and drink, but this is only a fraction of the causation. The immunity of the Indian from cancer of the stomach is connected with the fact that the same Indian has none of the local affections of the stomach summed up under dyspepsia. In other words frequency of cancer of the stomach is due largely to the very great frequency of gastric disorders as a whole. Whatever provokes the latter will be a factor in cancer. Simple ulcer of the stomach has long been known as a fertile cause of the latter. Half chewed bits of food which reach the stomach are repeatedly projected against the pyloric ring which is the chief seat of the disease in that organ.

Under the head of treatment it is admitted that radium and the x-rays in the hands of certain experts are doing much good—so much in fact that certain governments have been buying up radium in order that the poor may receive the same advantage as the wealthy. A tendency to combine the best features of surgery, caustics, and radiation in the individual patient is at present developing.

CANDIA. See CBETE.

CAPE COLONY. See CAPE OF GOOD HOPE PROVINCE.

CAPE OF GOOD HOPE PROVINCE. One of the four constituent provinces of South Africa, formerly known as Cape Colony and now constituting the southernmost province of the Union of South Africa; area, 276,966 square miles, with a total population of (census of 1911) 2,564,965; European or white, 582,377; colored, 1,982,588. In 1918 the European population numbered 619,319. The colony is divided as follows: Cape Colony Proper, East Griqualand, Tembuland, Pondoland, Transkei, Walfish Bay, and Bechuanaland. The capital is Cape Town, with a white population in 1918 of 99,693. Other towns with populations at that date are: Kimberley, 17,188; Port Elizabeth, 23,339; East London, 17,592. The races are mainly Hottentots, Malays, Kaffirs, Fingoes, and Bechunas. The census of 1911 gave the colored population of mixed race at 415,282. The Malays at that time numbered 19,763. On June 30, 1918, there were 4888 schools aided by the state with an enrollment of 269,422 (provisional figures, 1919). The trade between the Cape of Good Hope and the United Kingdom was: Exports to the United Kingdom, £15,104,000; imports from the United Kingdom, £9,097,000, of which £8,795,000 consisted of British produce and manufactures. The colony was merged in the Union of South Africa, May 31, 1910. The executive power is vested in the governor and in an executive council which consists of office holders appointed by the crown. See SOUTH AFRICA, UNION OF.

CAPE VERDE ISLANDS. A group of islands, 14 in number, belonging to Portugal and situated off the west African coast, with a total area of 1516 square miles, or according to some authorities, 1480 square miles, and a population at the census of 1912 of 149,793, of whom 4799 were white. The chief products are medicinal plants, coffee, hides, and millet. The estimated revenue and expenditures in 1917-18 balanced at 776,799 escudos. For further statistics see the preceding YEAR BOOKS. Capital, Praia.

CARILLON MAGICO, IL. See MUSIC, Opera.

CARINTHIA. Formerly a crownland of Austria in the Austro-Hungarian Empire; after the disruption of the Empire, a province of the new Republic of Austria itself; bounded by Tirol on the west, Styria on the east, Salzburg and Styria on the north, and Venetia, Görz and Carniola on the south; area 3987 square miles; population at the census of 1910, 396,200; estimated in 1913, 406,162. In 1910 the German-speaking element numbered 304,287. The majority are of the Roman Catholic religion. The capital is Klagenfurt with a population of 28,911 in 1910. Carniola was formerly represented by 10 members in the lower house in the Austrian Parliament and was locally governed by a single chamber of 43 members.

CARLISLE, BISHOP OF. See DIGGLE, J. W.

CARLISLE INDIAN SCHOOL. See INDIAN TRAINING AND INDUSTRIAL SCHOOL.

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE. See INTERNATIONAL PEACE AND ARBITRATION.

CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. See UNIVERSITIES AND COLLEGES.

CARNEGIE INSTITUTE OF TECHNOLOGY. A non-sectarian institution of the higher learning at Shennley Park, Pittsburgh, Pa., founded in 1900. In the summer session of 1920 there

were 511 students enrolled and in the regular fall session, 4123. The faculty numbered 396, including 71 additions. The income for the year was \$1,603,880. There were 10,307 volumes in the library on the campus, a branch of the adjacent Carnegie Library, which contains 450,000 volumes and is used by the students. President, Arthur Arton Hamerschlag.

CARNEGIE INSTITUTION OF WASHINGTON. The year was spent for the most part in returning to normal activities for the various departments. Most of the investigators who were drawn off during the war into government service or into the activities of industrial life had returned to their posts, in some cases to accept salaries much less than those offered by industrial concerns. Extraordinary results had already been obtained with the possibilities for the future by the Hooker telescope which was given a thorough test of its capabilities at the Mount Wilson Observatory during the year. The sixth cruise of the non-magnetic yacht *Carnegie* in October, 1919, to October, 1920, was the most successful one both with regard to rate of progress and in work accomplished. This vessel since it was put into commission in 1909 had traversed 250,000 miles. The trustees of the Institution decided to establish a Department of Genetics at Spring Harbor with sections of experimental evolution of eugenics, Record Office, the latter having been donated to the Institution by E. H. Harriman in 1918. Volume II of Professor Dickson's *History of the Theory of Numbers* appeared during the year. It is devoted to "Diophantine Analysis."

A notable event in the history of the Institution was the retirement of President Woodward on Dec. 31, 1920, who has guided the work for so many years. Dr. John C. Merriam of the University of California was appointed to take his place on Jan. 1, 1921.

Total receipts for the fiscal year 1919-20 were \$1,553,930.64, making a total received since its founding in 1902 of \$18,972,089.26. The publication of eight volumes was authorized by the Executive Committee during the year. Twenty-two volumes were published during the year, and 16 additional volumes were in press at its close.

CAROLINE ISLANDS. See GERMAN NEW GUINEA.

CASE, CLIFFORD PHILIP. Clergyman, died March 7th. He was born at Jersey City, N. J., Oct. 22, 1873; graduated at Rutgers College, 1897; after graduating at the New Brunswick Theological Seminary in 1900, was ordained to the Dutch Reformed Church. He was pastor in New Jersey and then for several years at Poughkeepsie, N. Y. After 1915 he was permanent clerk of the General Synod of the Reformed Church of America.

CASE SCHOOL OF APPLIED SCIENCE. A college of engineering at Cleveland, Ohio, founded in 1881, which gave courses in civil engineering, mechanical engineering, electrical, mining, and chemical engineering, and physics. In the fall of 1920 there were 743 students and 67 members of the faculty. The endowment amounted to \$2,580,000 and the income from all sources for the year 1919-20 was \$276,000. The department libraries contained 15,200 volumes. The chief addition to the equipment was the Warner and Swasey Observatory, which was dedicated October 12th. It is furnished with a 10-inch telescope, two astronomical transits, a zenith

telescope, and two Riefler clocks. President, Charles Sumner Howe, Ph.D., D.Sc.

CASSIDY, JOSEPH. Politician, died in Brooklyn, N. Y., November 21. For many years he was boss of the borough of Queens and at one time its president. He was born in the borough of Queens in 1866; was educated in the common schools and went to work in a large department store, in which he became the head of the fur department. He went into politics while still a young man and was appointed excise commissioner of Long Island City, which office he held until 1893. He became popular in local politics at the time of the consolidation of Brooklyn with greater New York and rose to the position of leader of the Democratic organization in Queens. His political power thereafter was virtually absolute, and he was especially popular among the younger element by whom he was known as "Curly Joe." He supported the successful candidate for the office of first Borough President of Queens under the new Greater City administration in 1897 and he was himself chosen his successor, and secured a second term. There was an extensive real estate development and he was believed to have amassed a large fortune during his term. Charges were made against him by the taxpayers, but no action was taken. He was defeated in subsequent campaigns for the office, but he retained control of the Democratic organization for many years. He still was partly in control in 1912, when he was indicted on the charge of selling the Democratic nomination for Supreme Court Justice. He was convicted Feb. 3, 1914, and sentenced to Sing Sing, but was released on parole on Jan. 26, 1916, and his citizenship was restored a year later.

CASTLE, EDGERTON. British popular novelist, died in the middle of September. He was born March 12, 1858, studied at the universities of Paris and Glasgow and graduated at Trinity College, Cambridge, with honors. He also passed through the Sandhurst Military Academy and the Inner Temple. After this wide range of studies he went into journalism serving for a number of years on the staff of the *Saturday Review*. Meanwhile he had published a treatise on *Schools and Masters of Fence* (1884). The list of his stories of which the greater number were written in collaboration with his wife, Agnes Castle, is too long to be reproduced here. Many of them were of an extraordinary popularity and some of them on being dramatized met with equal success on the stage. The best known of the earlier ones were *The Pride of Jennico* (1898) and *The Bath Comedy* (1899), both of which were dramatized with great success, the latter under the name of *Sweet Kittie Bellairs*. Among others were *The Secret Orchard* (1900); *Incomparable Bellairs* (1904); *My Merry Rockhurst* (1907); *The Hope of the House* (1915); *The Black Office* (1917); *Wolf Lure* (1917). The field of his writings was that of conventional romance. He was as successful in swordsmanship as in the writing of novels. For many years he was amateur champion of Great Britain in swordsmanship, and he was captain of the British épée and sabre teams at the Olympic games in 1908.

The latest romance was *John Seneschal's Margaret*; it also was written in collaboration with Agnes Castle.

CATALAN. See PHILOLOGY, MODERN.

CATHOLIC UNIVERSITY OF AMERICA.

A Catholic institution of the higher education situated at Washington, D. C., founded in 1887. The total number of students for the year 1920-21 was 1826 and the members of the teaching staff numbered 82. The university includes schools of sacred science, law, philosophy, letters, and sciences, and also a summer school. With the authorization of the university, colleges and seminaries may be affiliated, the affiliating institutions maintaining their self-government. In 1920 the affiliating institutions were the St. Paul Seminary at St. Paul, Minn., and the following institutions situated near the university: College of St. Paul the Apostle; Holy Cross College; Franciscan College; Apostolic Mission House; Trinity College; College of the Immaculate Conception; Catholic Sisters' College, and Mount St. Augustine's College; also the Institute of Scientific Study in New York City, and Mount St. Mary's Seminary of the West at Cincinnati, Ohio. Rector, the Rt. Rev. Thomas Joseph Shahan, S.T.D. LL.D.

CATTLE. See LIVESTOCK; DAIRYING; VETERINARY MEDICINE, etc.

CAUCASUS. The region of southeastern Europe comprising the isthmus which separates the Black Sea and the Sea of Azov from the Caspian Sea. It was formerly one of the general governments of the Russian Empire, divided into the two districts Ciscaucasia and Transcaucasia, with an area of 181,173 square miles and an estimated population, Jan. 1, 1915, of 13,299,100. No later statistics were available than those given in preceding YEAR BOOKS. Transcaucasia since the beginning of 1919 has been politically divided into the three small republics of ARMENIA, AZERBAIJAN, and GEORGIA (q.v.).

CELEBRATIONS. The greatest celebration of the year was the Pilgrim Tercentenary Celebration (q.v.), commemorating the 300th anniversary of the Landing of the Pilgrims at Plymouth in 1620. Two States, Alabama and Maine, celebrated the centennial anniversary of their admission to the Union and in honor of these events special commemorative coins of the value of 50 cents each were authorized by Congress to be made at the United States mint.

The celebration of the 400th anniversary of the discovery of the Straits of Magellan was held in Chile during November and December. The festivities were held principally in Santiago and Punta Arenas, the latter the world's southernmost city, where the occasion was marked by the inauguration of important public works, including port improvement, lighthouses in Smith Channel, a highway between Punta Arenas and Natales, on the South Atlantic Coast, and laying of a corner stone of the Punta Arenas University. The Hon. Joseph H. Shea, who represents the United States in Chile, was appointed a special ambassador to represent this country at that event. Besides the United States, Great Britain, Spain, and Portugal were invited to send special representatives to the celebration.

Brazil proposes to celebrate the centenary of its independence in September, 1922. That country separated from the Kingdom of Portugal and was proclaimed independent by Don Pedro I, the first Emperor of Brazil, on Sept. 22, 1822.

Plans entailing an expenditure of \$12,500,000 have been prepared. They include an exposition of fine arts, erection of a national historical museum and composition of an historical opera, and a drama. The scheme also provides for the or-

ganization of a great university. Sports will be a feature of the celebration. It has also been suggested that a national pantheon for all the illustrious personages of Brazil should be erected in Rio de Janeiro in connection with the celebration. It is proposed to erect in Sao Paulo one of the finest commemorative monuments in the new world as it was there that the first proclamation of independence was made.

CELTIC. See PHILOLOGY, MODERN.

CENSUS. During the fiscal year ending June 30th the Bureau of the Census completed its preparations and made the decennial enumeration of the population, agriculture, manufactures, mines, quarries, oil and gas wells, irrigation and drainage enterprises, and forestry products of the United States. The enumeration of the population and agriculture, which began on Jan. 2, 1920, was brought to practical completion some time before the close of the fiscal year, and all returns which were then outstanding have since been received. The preliminary announcement of the population of the United States (q.v.) made on Oct. 7, 1920, showed a total of 105,683,108, representing an increase of 14.9 per cent during the past decade, as against an increase of 21 per cent during the preceding 10 years. This falling off in the rate of increase was due mainly to the almost complete cessation of immigration at the time of the outbreak of the European war.

The census inquiries pertaining to manufactures, mines and quarries, etc., were made entirely independently of the censuses of population and agriculture; and the field work on these inquiries necessarily consumed a greater length of time. The work in the most important industrial districts was done either by special agents temporarily employed for the purpose or by permanent employees of the Bureau. The canvass was begun in February and was brought to practical completion in October.

The office force in Washington at the beginning of the census period, July 1, 1919, numbered 609, and by the close of the fiscal year, June 30, 1920, it had been expanded to 5502, exclusive of the 329 special agents paid on a per diem basis and 324 employees on the four-hour night force. The "turnover" in the force was enormous and exceedingly expensive. The cost of the field work for the enumeration of population and agriculture was approximately \$9,345,000, which represents a material increase as compared with the cost in 1910. Nevertheless, the increase is not as great as the average increase in wages in various industries or in the cost of necessities of life between 1910 and 1920. That is to say, the total cost of the enumeration in 1920 would purchase a smaller amount of the necessities of life than could have been purchased by a sum equal to the total cost of the enumeration in 1910. The per capita cost of the enumeration represented a still greater reduction when measured in commodity units. The cost of the 14th census work during the first fiscal year in which the bulk of the field work was done, was approximately \$14,000,000 and the Director estimates that the total cost of the work during the three-year period will be \$23,765,000, of which amount \$22,550,000 has been appropriated, leaving a balance of \$1,215,000 unappropriated.

WORK NOT CONNECTED WITH DECENNIAL CENSUS. During the census period the Bureau's force was, of course, employed mainly on the decennial census work, and its other lines of work

were relegated to the background. The important inquiries made at annual or more frequent intervals were, however, continued. These include statistics of births and deaths; financial statistics of cities and States; statistics on the production and distribution of cotton, cottonseed, and cottonseed products, and statistics of stocks of leaf tobacco held by manufacturers and dealers. The work on these and certain other inquiries was carried on with little interruption, except that the city and State finance investigation was curtailed. See AGRICULTURE and UNITED STATES.

CENSUS, AGRICULTURAL. See AGRICULTURE.

CENTRAL AMERICA. The territory in the south of the North American continent including Guatemala, Honduras, Costa Rica, British Honduras, Nicaragua, and Salvador. The term also sometimes includes Panama. See these titles. The project conceived in recent years for the confederation of the five Central American divisions made some progress in the course of the year. Delegates from Guatemala, San Salvador, Honduras, Nicaragua, and Costa Rica held a meeting early in December and elected officers who were to begin at an early date the work of organization. Conference was previously held by the presidents of Nicaragua and San Salvador, the Foreign Minister of Guatemala, and a representative of Costa Rica at Amapala in Honduras (November 19th). Representatives of Spain and the United States were present. At the close of the year a draft of an agreement on the subject was under consideration.

CEYLON. An island in the Indian Ocean off the southern end of Hindustan, constituting a British colony. Area, 25,481 square miles. Population in 1911, 4,110,367, estimated at the beginning of 1919, exclusive of the military and shipping, 4,686,383. The Maldive Islands situated 400 miles to the west and governed by a local sultan, pay an annual tribute to the Ceylon government. They are inhabited by 70,000 Mohammedans. The population of Ceylon is distributed by race according to 1918 estimate as follows: Singhalese, 2,089,364; Tamali, 1,352,492; non-Malay Mohammedans, 277,630; Burghers, 29,043; Malays, 14,118; Europeans, 7301; Veddahs and others, 16,435. The marriage rate according to 1918 estimates was 10.2 per 1000, the birth rate 39.2, and the death rate 31.9. Distribution according to religion in 1918: Buddhists, 2,823,652; Hindus, 1,070,791; Mohammedans, 323,694; Christians, 466,964. The urban population is about 13 per cent of the total. The chief towns with their 1911 populations are Colombo, 211,274; Galle, 39,960; Jaffna, 40,441; Kandy, 29,451. The government schools in 1918 numbered 843 with an attendance of 88,588 boys and 30,691 girls; aided schools, 1850, with an attendance of 134,055 boys and 81,406 girls; unaided schools, 1128, with an attendance of 27,003. In English and English vernacular schools which numbered 329, there were 38,528 boys and 10,612 girls. The acreage under coconuts in 1918 was 925,921; rice, 678,814; other grains, 146,572; tea, 505,689; rubber, 281,491; cinnamon, 37,969; cacao, 30,851. The chief mineral for export is plumbago, of which the mines, Jan. 1, 1919, numbered 263, and the exports for 1918 were 304,340 hundredweight. Other minerals include gold, thorium, and monazite, and there are many quarries of small gems. The manufactures chiefly consist in the working of agricultural

products, as, for example, the making of coconut oil. The registered factories in 1918 numbered 1040. The imports in 1918 inclusive of bullion and specie were £11,840,112; the exports £14,208,922. In 1919 the imports amounted to \$95,729,492; exports, \$141,507,170; re-exports, \$5,314,742. A little over 30 per cent of the imports came from British India, which received nearly 7 per cent of the exports. The United States received 33¼ per cent of the exports and the United Kingdom 42 per cent. The import trade with the United States is relatively small. Of the total exports in 1919, the most important was rubber, amounting to \$55,492,495; next, tea, \$46,600,656; and then in the order of their importance, copra, cocoanuts, cinnamon, cacao, areca-nuts, and coir. Revenue (1917-18), £4,262,242; expenditures, £4,329,036. The public debt on Sept. 30, 1918, was £5,251,513. The shipping entered and cleared in 1918 was 6,607,565 tons, of which 4,975,698 were British. Ceylon possessed a merchant marine on Jan. 1, 1918, of 143 sailing vessels and seven steamers.

CHAFIN, EUGENE WILDER. Prohibition candidate for President in 1908 and 1912, died at Long Beach, Cal., November 30, as the result of an accident by fire. For many years he had been a temperance advocate of note and an organizer of temperance and prohibition movements. He was born at East Troy, Wis., on Nov. 1, 1852; educated in the public schools and studied law at the University of Wisconsin. Admitted to the bar in 1875, he practiced in Waukesha and Chicago. His political career as a Prohibitionist began with his candidacy for Congress in 1882. He subsequently ran for various other offices on the Prohibition ticket, at a time when success on that issue was impossible. He wrote *Lives of the Presidents* (1896) and biographies of Lincoln and Washington.

CHALMERS, ALBERT JOHN. British physiologist, died, April 5. He was born at Manchester, England, March 28, 1870, educated at the University Colleges of Liverpool and London, and served in many parts of the British colonial empire on various medical commissions. For his work in the West African and Ceylon services from 1897 to 1911 he was awarded a gold medal and received medals and orders also for his services in Ashanti and in the Ceylon coronation contingent. He was author of works on tropical medicine, physiological chemistry, hygiene, etc.

CHAMBERS, JULIUS. Editor and author, died in New York City, February 12. He was born at Bellefontaine, Ohio, Nov. 21, 1859; studied at the Ohio University and at the Columbia College Law School; joined the staff of the *New York Tribune* in 1870; and from that time on served in various capacities on New York papers including the *Herald* and the *World*. He had wide experience as a traveler, beginning with an expedition in his youth to the headwaters of the Mississippi River which he discovered in Elk Lake, Minn., and including voyages to Egypt, the West Indies, and the cities of Europe. After 1904 he contributed a daily department to the *Brooklyn Eagle*, entitled "Walks and Talks," and lectured on journalism at Cornell and New York universities. Among his writings may be mentioned: *A Mad World*; *The Mississippi River*; *The Destiny of Doris*; *Seeing New York*; and *Joy of Living*. He wrote a musical comedy entitled *The Nargasson Maid* and was the author of numerous short stories.

CHAMBER OF COMMERCE. See CITY PLANNING.

CHAPIN, ANNA ALICE. Author, died in New York City, February 26. She was born in New York City, Dec. 16, 1880; was privately educated, and studied music in New York City; married Robert Payton Carter in 1906. She wrote a number of works pertaining to the scores of Wagner and other musical subjects; fairy stories, plays, and novels. Among the more recent ones may be mentioned. *The Street Car Mystery* (1911); *The Spirit of the Sea* (a poem on the Titanic disaster, 1912); *The Eagle's Mate* (1914); *The Topsy-Turvy Fairy Book* (1914); *The Everyday Fairy Book* (1915); *Mountain Madness* (1915); and *Greenwich Village*.

CHARITIES. Work during 1920 in the charitable field progressed with more organization than in previous years. Special attention was given to work in Europe and especially among the starving populace in Slavic countries. Work in the United States has been directed with particular attention toward industrial centres. (See RED CROSS.) Extensive relief work at home has been done during 1920 by the Red Cross. Emphasis has been laid upon the field of health promotion and disease prevention.

DOMESTIC PEACE-TIME PROGRAMME. The new department of Health Service of the American Red Cross was in operation seven months of the fiscal year, during which time 128 health centres were in active operation, while 435 Red Cross chapters were engaged in some form of disease-preventing work. Six thousand certificates were issued to persons completing First Aid courses while 1500 new members were enrolled in the Red Cross Life-Saving Corps. Enrollment in the Red Cross Nursing Service increased during the year from 35,426 to 36,705. To help meet the shortage of public health nurses the Red Cross established 288 scholarships, in addition to 250 awarded by various chapters. The number of women and girls completing the Red Cross course in Home Hygiene and Care of the Sick increased during the year from 34,033 to 93,093. Students certified as the result of completing Food Selection courses totalled 1497.

In fulfilling its traditional function in the relief of victims of disaster 140 Red Cross chapters were in action during the year, 30,000 persons in 164 communities, victims of 73 disasters, being assisted. This work also involved the establishment of 30 temporary hospitals and 20 motor corps and the dispatch of seven Red Cross relief trains.

Under the banner "Happy Childhood the World Over" over 11,000,000 American school children enrolled in the Junior Red Cross during the year, performing many services for the comfort of World War veterans and children in hospitals and carrying on other civic undertakings, in addition to directly furnishing relief supplies and service for war victims overseas, particularly children.

THE AMERICAN ASSOCIATION FOR ORGANIZING FAMILY SOCIAL WORK, (formerly the American Association for Organizing Charity). This body enlarged its staff to cover two definite fields: The executive staff which consists of the director and an associate, has charge of the administrative end of the work, including publications such as pamphlets pertaining to family case work and the periodical, *The Family* (published monthly, ten times a year); the field staff now consists

of six under the direction of Francis H. McLean. Each of these field workers covers a definite territory with headquarters in the following cities: Denver, Chicago, Baltimore, New York and New Bedford. The field staff makes visits to such communities as need their services and works in the closest coöperation with the division offices of the Red Cross. The Association is composed of 186 variously-named societies in as many different cities, which share the same general principles of doing case work with families. These agencies meet certain requirements such as employing at least one trained paid worker; their boards of management are open to all in the community regardless of sect; and they have signed the transportation agreement which prohibits the "passing on" of dependents from one community to another on which they have no claim. During the past year the Association assisted in the organization or reorganization of 24 societies for family social work, and made visits of consultation to 112 others, as well as carrying out six special community surveys. The total number of cities advised by correspondence was 383.

NATIONAL CONFERENCE OF SOCIAL WORK. The 47th annual meeting of the National Conference of Social Work was held at New Orleans, April 14-21. This organization is made up of over 4000 leaders and workers in the social service field of the United States and Canada. Its primary purpose is to bring its members into annual conference for the exchange of experience and discussion of the problems of social work. The Conference has no platform and adopts no resolutions of findings or of social programmes. It has clung to the conviction that a mutual exchange of opinions is the more effective means of raising the standards of social service both public and private. Education rather than propaganda is its underlying purpose.

The success of the conference as a clearing house for social experience is indicated by the list of other organizations which held their meetings at the same time and place so as to get the advantage of discussion with others than those in highly specialized fields. At New Orleans, the following kindred groups were present: The Association of Training Schools for Professional Social Work, The American Red Cross, The American Association of Hospital Social Workers, The National Children's Home and Welfare Association, the Nation Probation Association, The American Association for Community Organizations, The Foreign Community Workers of the National Board of the Y. M. C. A., the American Association for Organizing Family Social Work, The National Child Labor Committee, The National Travelers Aid Society, and The National Conference of Jewish Social Service.

The conference meets in both general sessions, and as specialized divisions. In the latter, social workers divide along the lines of their specialties, and by discussion thrash out the differences that varying experience produce. The subjects of these divisions are: Children, Delinquents and Correction, Health, Public Agencies and Institutions, Family, Industrial and Economic Problems, the Local Community, Mental Hygiene, Organization of Social Forces, and United of Native and Foreign Born. Each general session is assigned to one of the divisions for the purpose of giving it an opportunity

to present its latest and most generally applicable discoveries to the whole body of social workers.

The National Conference at present is concerned with the relation of its own specialty to the other great social movements of the present day, such as public education, medical science, government, labor, law, and the church. It is recognized that further progress in social service depends upon the coöperation between all such forces—consequently the plans of the Conference for 1921 are to centre discussion on these community-wide obligations of social work. This is being made the keynote of the programme now planned for the next conference at Milwaukee, Wis., on June 22-29, 1921.

The officers of the Conference consist of an Executive Committee of fifteen members at large and the chairmen of the ten specialized divisions, and the President, three Vice-Presidents, Treasurer, and Secretary. For 1921 the officers are: President, Allen T. Burns; 1st Vice-President, Robert W. Kelso; 2nd Vice-President, Marcus C. Fagg; 3rd Vice-President, Mary E. Richmond; Treasurer, Charles W. Folds; and Secretary, William H. Parker. Headquarters are maintained at 522 Fifth Ave., New York City and the office of the Conference is at 23 East 9th St., Cincinnati, Ohio.

NATIONAL INFORMATION BUREAU. As a co-operative effort to protect the contributing public and to standardize the methods of national social, civic, and philanthropic organizations, the National Information Bureau, 1 Madison Avenue, New York, Barry C. Smith, Director, carried on during the year the work begun by the National Investigation Bureau in 1918. After a conference in the summer of 1919, at which leading social agencies were represented, the Bureau was reorganized so that it became representative not only of the contributing public, but also of organized social work. Its Board of Directors composed equally of representatives of both groups adopted standards which all social, civic, and philanthropic agencies seeking funds from the public on a national or interstate basis were invited to accept. These standards included an active and responsible board of directors, a legitimate purpose with no avoidable duplication, reasonable efficiency, no solicitations on commission or by the use of the remit or return method, no entertainments where expenses exceeded 30 per cent of the gross proceeds, ethical methods of publicity and promotion, agreement to consult and coöperate with the proper social agencies in local communities with reference to local programmes and budgets, complete annual accounts audited by a certified public accountant and the use of an annual budget. In the light of these standards, nearly 1400 agencies had been investigated by the Bureau up to the end of 1920. Five bulletins, listing social agencies approved after investigation, were issued and 4500 special confidential reports relating to particular organizations were sent to inquirers. The Bureau is financed by membership fees and contributions from individuals, corporations, philanthropic foundations, community chests, charity federations and chambers of commerce. No fees are accepted from organizations whose work brings them within the Bureau's field of investigation. On October 1st, under the joint auspices of the Bureau and a committee of the National Conference of Social Work, a confer-

ence of national social agencies was held in Washington to consider possibilities of increased coordination of their work. Steps were taken as a result of this conference to prepare a concrete programme which was to be developed during 1921. In November, the Director of the Bureau went abroad to make a first-hand study of American relief work in Austria, Serbia, Poland, and Germany.

For further information on charity work, see also RED CROSS, Y. M. C. A., Y. W. C. A., ROCKEFELLER PHILANTHROPIC BOARDS, COMMUNITY SERVICE, and RELIEF FOR WAR VICTIMS. The reader should also consult JUVENILE COURTS, and articles referred to under Social Economics.

CHAUTAUQUA INSTITUTION. This institution was founded in 1874, and now carries on its activities under three general heads: (1) the public Assembly, with an educative though necessarily popular series of lectures and addresses, dramatic and other entertainments, concerts, etc., continuing through eight weeks each year. In the aggregate there is an annual attendance of 50,000 persons; (2) the Summer Schools, offering formal classroom instruction in a great variety of subjects, under 13 departments, for six weeks annually, and enrolling over 3000 students; (3) and the Home Reading work, presented in a set of four books and the news narrative appearing regularly in some weekly review, at present *The Independent*. The teaching element is supplied by a monthly bulletin, *The Round Table*. This department, which operates throughout the year, has an official enrollment of about 10,000, but the number of readers is much larger.

The forty-seventh Assembly was held during the months of July and August, 1920 at Chautauqua, N. Y., and proved a great success. Among the subjects of the lectures given were: "Modern Literary Tendencies," by Prof. Richard Burton; "Aftermath of the War," by Herbert Adams Gibbons; "A Study in Economic and Moral Aspects," by Dr. Edward H. Griggs; "The Jew in Modern Fiction," by Rabbi Louis Wolsey; and "Woman and the New Era." The Summer Schools were 25 per cent ahead of last year in income and from 15 to 20 per cent ahead in the number of registrants. A country club house is to be erected before the Assembly opens next summer. It is the gift of Mr. and Mrs. S. I. Munger. The Comprehensive Plan for the purpose of raising \$600,000 which was inaugurated in 1919, was brought to a close, although but \$450,577.99 was raised. The Institution plans to get the remaining \$150,000 during 1921 by private subscription, and does not feel discouraged because the set goal has not yet been reached. Of what has been raised, \$75,096.33 was given by John D. Rockefeller. Mr. Arthur E. Bestor is President of the Institution.

CHEESE. See DAIRYING.

CHEMICAL INDUSTRIES. See CHEMISTRY, INDUSTRIAL.

CHEMICAL SOCIETY. See CHEMISTRY, INDUSTRIAL.

CHEMISTRY. The progress of chemistry during the year fails to reveal any remarkable discovery that tends to advance the science in a conspicuous way; moreover the laboratories of the great universities of Central Europe have not as yet fully resumed the publication of the results of the investigations undertaken in them, and in the English-speaking countries the

work of industrial corporations where by far the greatest advances are now being made, is not apt to be given to the public or appear in scientific journals. Nevertheless, the literature of chemistry is steadily on the increase and more journals devoted to it are issued than ever before. From among the many papers that have been published during the year a few have been selected to indicate the character or trend of the progress made.

In general three papers may be mentioned as of value in summarizing existing knowledge on the topics of which they treat. They are "Charcoal before the War," by Wilder D. Bancroft of Cornell University. This study is in three parts and appears in successive issues of the *Journal of Physical Chemistry*. Also see "War Experiences in the Manufacture of Nitric Acid and the Recovery of Nitrous Fumes," by James Walker, and "Helium: its Production and Uses," by John C. McLennan. Both were delivered before the London Chemical Society and appear in its Transactions (pp. 382-389 and pp. 923-947 respectively).

ATOMIC WEIGHTS. In the Annual Report of the International Committee on Atomic Weights for 1920-21 reference is made to studies on these values for the elements fluorine, silicon, lead, tin, tellurium, scandium, and samarium. The only change in the table is in the case of scandium which in view of the evidence presented, is increased from 44.1 to 45.1.

ANALYTICAL CHEMISTRY. I. Bellucci, an Italian chemist, finds that one mg. of cobalt in solution may be detected color-metrically in 1 to 2 litres of water by means of alpha-nitro-beta-naphthol, and in about 17 litres of water by means of beta-nitro-alpha-naphthol. He also finds that one mg. of nickel in 4 to 5 litres of water may be detected by means of dimethyl glyoxime. A new manometric ureometer is described by Paul Bobay. Its principal features are a piston with ground surface fitting into the base of the ureometer and the addition of a manometric tube to the graduated tube. D. Ganassini under the title of "New Color Reactions of Quinine" says that a yellow coloration which becomes rose and finally purplish red is developed, when a few drops of pyridine are added to a solution of quinine or of a quinine salt containing a slight excess of freshly prepared chlorine water. A French chemist, G. Demigès, recommends the use of iodic acid as a micro-chemical reagent for soluble and insoluble compounds of calcium, strontium, or barium; for he finds that a 10 per cent aqueous solution of this acid gives almost immediately finely crystalline characteristic precipitates of calcium, strontium, or barium iodate with salts of these metals. F. C. Fuchs, under the title of "A Test for Molybdenite," recommends that the mineral be dissolved in fused potassium hydroxide. If molybdenum sulphide is present, it dissolves with an intense red color. If the fused mass is cooled and dissolved in water, the color changes to blue, green, yellow, etc., corresponding with the various stages of combination of molybdenum. A single method for detecting human blood on a knife-blade or other non-absorbent surface, recommended by Angelo de Dominicis, consists in pouring on to the spot a very dense solution of celluloid in amyl acetate, allowing the solvent to evaporate, removing the dry pellicle by means of

needles and examining under the microscope the superficial layer of blood on the pellicle. If the latter cannot be removed from the blood-stained surface, it may be first thickened by a second application of the celluloid solution. An elaborate study on the Estimation of Phosphoric Acid, by Hans Kleinmann appeared during the year. It was divided into five parts as follows: 1, The Estimation of Phosphoric Acid as Magnesium Ammonium Phosphate and the Hindrance of its Precipitation by the Serum Constituents. The Estimation of Phosphoric Acid as Uranium Phosphate and as Silver Phosphate. 2, The Estimation of Phosphoric Acid in Phosphomolybdates. Gravimetric and Colorimetric Methods. 3, The Estimation of Phosphoric Acid in Phosphomolybdates. Volumetric and Sedimentic Methods. 4, The Estimation of Phosphoric Acid as Strychnine-Phosphoric Acid-Molybdenum Compound (Nephelometry). The General Principles of Nephelometry and the Construction of a New Nephelometer. 5, The Estimation of Phosphoric Acid as a Strychnine-Phosphoric Acid-Molybdenum. Special Phosphoric Acid Nephelometry and a New Method of Preparation of the Strychnine-Molybdenum Reagent. These topical headings clearly indicate the great value of this contribution to the use of this important reagent. During the year the United States Geological Survey published as a bulletin, W. F. Hillebrand's "Analysis of Silicate and Carbonate Rocks," which is a general treatise on the analysis of rocks. Methods are described for the separation and estimation of the common and rare constituents of the rocks, and only those methods that have been found to be trustworthy are recommended. Attention is called to the frequent occurrence of boron in rocks, especially as the estimation of this element has usually been neglected.

INORGANIC CHEMISTRY. Our knowledge of the composition of the atmosphere is still quite uncertain, especially in regard to the hydrogen and the relation between oxygen and nitrogen. Accordingly August Krogh undertook a study of the variation in the mixture composing the atmosphere at different altitudes, designing special gas apparatus for his work. He found that the percentage of carbon dioxide in the streets of Copenhagen was usually increased by 0.001 to 0.007. The absolute composition of the atmospheric air at the earth's surface is CO_2 , 0.030; N_2 , 79.022; and O_2 , 20.948.

The important subject of the Electric Deposition of Nickel was studied by L. D. Hammond whose experiments show that although cast-nickel anodes corrode fairly well in simple sulphate solutions to which boric acid has been added, the best results are obtained when the purest electrolytic nickel in nickel sulphate solutions containing chloride is used. The substitution of nickel ammonium sulphate by nickel sulphate in nickeling baths is recommended. To ensure a good deposit of nickel it is essential that the bath should be slightly acid, and for this purpose boric acid has been found desirable. Metals which yield surface colors become coated with a film of oxide, the rate of thickening of which with the time can be estimated by the alteration of the surface colors. Certain metals yield similar colors with iodine vapor at ordinary temperature, and these are particularly suitable for the experimental investigation of the laws governing the rate of

formation of the surface layer. To this subject G. Tammann devoted much time and has given in an elaborate paper his results typical of which is the following: A strip of silver shows three different types of behavior toward iodine according to whether it has been rolled and cleaned, has been melted and thus covered with larger crystallites, or has been left unworked and thus covered with multitudinous, small, dendritic crystals. Triatomic Hydrogen was made the topic of an investigation by Gerald L. Wendt and Robert S. Landauer. These authors have produced a reactive modification of hydrogen by three methods all of which are dependent on gaseous ionization, as follows: by the alpha-rays from radium emanation; by an electrical discharge under reduced pressure; and by the high potential corona at atmospheric pressure. After describing its properties a conclusion is reached that as positive ray analysis at very low pressures shows a large proportion of triatomic molecules which are undoubtedly the molecules responsible for the chemical activity, hence there exists a gas of an ozone form which properly may be called "hyzone." A. C. Vournazos describes "A New Series of Complex Compounds," which he calls antimonyoxyiodides. He finds that when antimony tri-iodide is decomposed by water to produce antimonyoxyiodide there is an indication of the intermediate formation of an unstable complex acid ($\text{H}_2(\text{SbOI}_4)$) of which he prepared the corresponding mercury and copper salts. The properties of these salts are described. The "Crystalline Structure of Antimony" has been studied anew by R. W. James and N. Tunstall by means of an X-ray spectrometer, using a bulb with a palladium anticathode. The glancing angles for first-order spectra were found to be as follows: (100), $5^\circ 27'$; (110), $7^\circ 24'$; (110), $7^\circ 50'$; (111), $4^\circ 26'$; and (111), $19^\circ 14'$. Eric K. Rideal and Jacob Kunz investigated the Distribution of Ozone in the Direct Current Corona. After discussing the theoretical formation of ozone by various methods in the light of the different radiation hypotheses, and the conclusion reached that molecular species of a given type may be activated to varying degrees by a given radiation, the experimental distribution of ozone in a direct current corona is reported on. A conclusion is reached that the ultra-violet light emission from the corona exceeds that of the visible light, and in the corona itself the ratio of ultra-violet light to visible light is exceedingly high. A valuable contribution to this branch of chemistry was made by V. Kohlschütter and J. L. Tüscher on Topochemical Reactions," with special reference to the Formation and Behavior of Copper Hydroxide. A topochemical reaction is defined as one which depends on the relative position in space of the reacting groups or molecules. A long account is given of the various methods of preparation of copper hydroxide and the properties of the various products. In particular the loss of water from the hydroxide to form oxide and partly dehydrated hydroxides is considered. A paper of unusual importance on the Salts of Stannic and Plumbic Acids by Hans Zocher is worthy of mention. This study was undertaken for the purpose of elucidating the so-called semi-colloidal state, and after a critical discussion of this condition the methods for preparing and analyzing alkali stannates are described. He concludes that: The low crystal-

lization velocity of the oxide, resulting from its slight solubility, facilitates its assumption of the colloidal state. The "aging" of the colloid is accelerated or retarded by various influences, particularly by accompanying salts in solution. Coagulation, that is, the coalescence of the bounding surfaces of the colloidal particles in solution, is retarded by the electrostatic charge on the particles. The work was also extended to the plumbates.

MINERALOGICAL CHEMISTRY. Much of the recent work in this branch of chemistry has been either in crystallography or concerning the optical properties of minerals which cannot be discussed here. An important study, "The Genesis of Petroleum as Revealed by its Nitrogen Constituents," by Charles F. Mabery, is worthy of mention. He finds from an examination of 21 specimens of petroleum evidence that justifies the conclusion that nitrogen is contained in the petroleum of all the principal oil fields in forms of combination which could only have had their origin in the remains of vegetable or animal bodies. Presumptive evidence has been shown that the associated hydrocarbons in petroleum had the same origin. Villamaninite is a new mineral announced by W. R. Schoeller and A. R. Powell from the Carmenes mines, near Villamanin, Spain. It is a copper, nickel, cobalt, and iron sulphide with part of the sulphur replaced by selenium. Other new minerals include brannerite, a new uranium mineral from the gold placers in Stanley Basin, Idaho. It was described by Frank L. Hess and R. C. Wells. Its composition is very complex and is expressed by the formula $6(\text{Ca}, \text{Fe}, \text{UO}, \text{TiO})\text{TiO}_3 \cdot 8(\text{Th}, \text{Zr}, \text{UO})\text{Ti}_2\text{O}_7 \cdot \text{Yt}_2\text{Ti}_2\text{O}_7 \cdot 3\text{H}_2\text{O}$. Bismutoplagonite is a new lead bismuth sulphide with the formula $5\text{PbS}_4\text{Bi}_2\text{S}_3$, described by Earl V. Shannon from Wickes, Montana. Zebedassite is a new hydrated aluminum and magnesium silicate with the formula $4\text{H}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 5\text{MgO} \cdot 6\text{SiO}_2$, described by Amalia Brusoni from Zebedassi in the Pavian Apennines. G. Flink published an account of a new lead manganese vanadate from Longban, Sweden, to which he gives the name Pyrobelonite. Ultrabasite is the name of a new mineral from Freiberg, Saxony, described by V. Rosicky and J. Sterba-Bohn. It is an antimony silver, lead, germanium sulphide with the formula $\text{Sb}_4\text{Ag}_2\text{Pb}_2\text{Ge}_2\text{S}_{12}$.

ORGANIC CHEMISTRY. A notable development that is conspicuous among the papers devoted to this branch of chemistry that have been published this year is the fact that in many of the laboratories extensive investigations extending over a series of years are now in progress. In other words discussion of groups is becoming more prevalent, rather than of some one individual compound. The very great and extensive ramifications of organic chemistry makes it practically impossible to adequately cover the enormous amount of research now being carried on.

Some of the larger papers now in progress include the following: Emil A. Werner is studying "The Constitution of Carbanides," and his twelfth paper was on "The Decomposition of Urea when Heated in Solution in the Presence of Acids." "Changes in the Physical State of Colloids," by Richard Wagner has reached its twenty-fourth paper which bears the subtitle of "Precipitation of Protein by Acids and Alkalis." T. Sabalitschka published his fifth paper on the

"Decomposition of the Acid Salts of Dibasic Acids in Aqueous Solution." "Keto-enolic Desmotropy," by Kurt H. Meyer and V. Schoeller is of like character and reached its twelfth part on "The Fractional Distillation of Ethyl Acetoacetate. The series on "Halogenalkylated Aromatic Amines," by J. von Braun and G. Kirschbaum attained its fifth issue on the Preparation of Aryl Vinyl Ethers. The very longest of these continued papers was by Rudolf Wegscheider on the "Esterification of Unsymmetrical Di- and Poly-basic Acids," the thirty-third part of which bore the subtitle of "Esterification of Aminodicarboxylic Acids." The eighth paper on "Methyleneanthraquinone," has been published in the valuable researches on "Anthracene," by Kurt H. Meyer. Heinrich Wieland with various associates has been studying the ditertiary hydrazines, and with E. Haas completed the twelfth paper in the series on "Ditertiary Hydrazines, of the Quinoline Series." An important contribution is that on "The Theory of Electrolytic Ions," by R. Lorenz and E. Schmidt, of which the 17th paper was on "The Conductivity of the Sodium Arsenates."

Among other papers of importance are the following: under the title of Rhodanines, Ch. Gräbner has undertaken to elucidate the constitution of Nencki's rhodanine red, but great difficulty was experienced in purifying the dye, since it could not be made to crystallize, and analyses of the product moreover showed it to be more complex than was anticipated. It was however demonstrated that the imino-hydrogen of the rhodanine is not concerned with its oxidation by ferric chloride, since N-substituted rhodanines, such as 3 phenylrhodanine, also yield red dyes under suitable conditions. Ossian Aschan contributed to the chemistry of synthetic rubber a paper on New Hydrocarbons of High Molecular Weight from Isoprene. It is not altogether new but it was not until early in the year that it became available in English. The additive capacity of caoutchouc shows that one double bond of isoprene disappears in its formation, and is utilized in uniting the condensed isoprene molecules. The molecules which are thus formed by purely chemical reaction are subsequently united to greater complexes, probably by physical and secondary chemical forces (such as residual affinities). According to Aschan, therefore, two processes are operative in the formation of caoutchouc, which differ from one another not only in respect of rapidity, but also of nature, namely, first, a purely chemical condensation involving certain ethylenic bonds in isoprene and leading to new carbon compounds, and secondly, formation of greater complexes from the simplest caoutchouc molecules so formed which does not involve the production of carbon compounds in the ordinary sense. The latter process only takes place gradually, and is probably never complete; it constitutes the so-called polymerization of caoutchouc. The converse process, depolymerization, occurs when caoutchouc forms additive products and when it is dissolved, particularly in hot solvents. The Periodides of Carbonyl Compounds is the title of an investigation by A. M. Clover, who, after reviewing the isolated instances in the literature of periodides derived from organic compounds from nitrogen, concludes that it is the carbonyl group which is essentially involved in their structure, and suggests the designation "carbonyl periodides," including

among them the periodides of dimethyl and tetramethyl pyrones, and of amides and anilides. The Biochemical Preparation of Sucrose from Gentianose is reported by E. Bourquelot and M. Bridel. These authors find that by the action of emulsin, freed as completely as possible from invertase, on a solution of gentianose, a mixture of dextrose and sucrose was obtained. The dextrose was then converted into beta-methyl glucoside and the sucrose isolated in a pure crystalline state. Amé Pictet and Pierre Castan have studied anew the interesting brown amorphous substance which in 1860 Gélis obtained by heating dextrose at 170° and named Glucosan. They find that this compound can be obtained in a pure crystalline state if the dextrose is heated at 150°-155° under a pressure of 15 mm. Thus obtained it has a melting point of 108°-109°, is very deliquescent, and has $(\alpha) + 69.8$ in water. They find it has the formula $C_6H_{12}O_6$.

The weight of a Normal Litre of Propane was determined by J. Timmermans who prepared his propane by the action of sodamide on propyl iodide and by the action of sodium on butyronitrile. The weight of a normal litre of the gas, prepared by either method, was found to be 2.02 grams. The successful Synthesis of Pelargonidine was accomplished by R. Willstätter and L. Zechmeister in five steps resulting in a chloride identical in composition, crystalline form, solubility, reaction, and absorption spectrum with the chloride of natural pelargonidine. Other papers include the Syntheses of Humic Acids by W. Eller and K. Koch. In this it is shown that the oxidation of phenols in alkaline solution leads to the formation of substances which appear to be identical in all respects with the natural humic acids; only such phenols, however, as are capable of giving quinonoid intermediate products present this behavior. The acids are obtained by allowing the alkaline solutions of the phenol to remain exposed to the air, or more rapidly, by the addition of finely powdered potassium persulphate to the solution. Th. Bokorny has investigated The Chemical Nature of Enzymes by estimating the alkylamino-nitrogen in a number of well-known enzymes by means of nitrous acid. The amino-nitrogen was found to vary from 3.05 per cent in rennet to 7.66 per cent in papayotin. The results obtained seem to favor the theory of the protein nature of enzymes.

PHYSIOLOGICAL CHEMISTRY. An interesting contribution to this branch of chemistry is by H. Teudt on the Origin of Odor. He presents the causes and deduces the theory that odor is developed by setting the valency electrons within the molecule into vibration. The elaborate investigations of the Physiology of Glands, by N. Danoff has reached its 38th publication which is devoted to the Influence of the Spleen on the Respiratory Metabolism. He finds that the respiratory metabolism of small animals is higher per unit body weight and time than that of larger animals, and that it rose as the surrounding temperature sank. A very complete study of the Active Principles of the Pituitary Gland, by H. W. Dudley shows that the extract contains all the uterine stimulant together with some of the pressor substance and contaminating substances. The view expressed by Abel and Kubota that histamine is identical with the uterine stimulant is not confirmed, owing to the many differences observed in the properties of these two

substances. Sinicha Giaya finds the invariable presence of zinc in the viscera of a number of corpses examined by him, the proportion increasing with age. The chemical nature of the bee's poison has been carefully investigated by Ferdinand Flury, who finds that the principle is a base of complicated constitution. By means of digestive processes, a considerable fraction of a lipid nature was obtained from it. The following were the products of hydrolysis with hydrochloric acid: (1) a ring compound of the indole series; (2) choline; (3) glycerol; (4) phosphoric acid; (5) palmitic acid; (6) a high molecular, non-crystallizable, unsaturated fatty acid; (7) a volatile fatty acid, presumably butyric acid; (8) and a nitrogen-free fraction. The latter fraction was found to be the pharmacologically active principle of the bee's poison. According to the method of isolation, it can be obtained either as a neutral compound sparingly soluble in water or as an acid soluble in water. The author expresses the opinion that the bee's poison in the natural secretion is present as a complex compound in combination with lecithin and a basic fraction. H. Hartridge whose activity in all matters pertaining to physiological chemistry is so great, announces that positive results indicate the possibility of there being in a heavy smoker a condition of chronic carbon monoxide poisoning. W. Plotz finds after a number of experiments that the chlorine derivatives of methane, ethane, and ethylene show that the hæmolytic activity of these compounds is proportional to their molecular weight and to the number of chlorine atoms. The extensive Vitamine Studies by R. A. Dutcher, E. M. Pierson, and A. Biester were continued during the year and their fifth joint paper on The Antiscorbutic Properties of Raw Beef gives the results of experiments with diets on guinea pigs, especially with extracts of raw lean beef. No scurvy was developed in consequence of the diet used. According to André Mayer and Pierre Morel pulmonary tissue contains an enzyme which hydrolyses esters and glycerides, and has properties different from those of pancreatic lipase. In a study on the Water-soluble Vitamins, A. D. Emmett and G. O. Luros considered the question as to whether the antineuritic and the growth-promoting water-soluble-B vitamins are the same. As the antineuritic factor appears to be more readily decomposed by heat, these authors conclude that tentatively they are different. Wilhelm Stepp describes substances possessing the properties of aldehydes which he found present in the blood of some diabetic, nephritic, and other patients. These substances form iodoform with iodine in alkaline solution, and reduce Fehling's solution as well as ammoniacal silver, and give a red coloration with magenta-sulphurous acid.

CHEMISTRY, INDUSTRIAL. The conspicuous feature of the year's progress seems to be a tendency towards the establishment of a greater supervision of the development of chemical industry under official government auspices. Such a tendency has been shown not only in the United States and Great Britain but also in France, Italy, Belgium, and Japan. The Belgian movement is typical, and that nation has provisionally approved the establishment of a national system for encouraging scientific and industrial research.

ORGANIZATIONS. The American Chemical So-

ciety held its spring meeting in St. Louis, Mo., during April 12th-17th. The annual meeting was held in Chicago, Ill., during September 6th-10th. The Constitution was amended by increasing the dues from \$10 to \$15 a year. The membership is reported as 15,506. Four new sections, known as the Savannah (Ga.) Section, the South Jersey, the Colorado, and Omaha (Neb.) respectively were created. The president during the year was Prof. William A. Noyes. The American Electrochemical Society held its spring meeting in Boston and Cambridge, Mass., during April 8th-10th, and the general meeting in Cleveland, Ohio, during September 30th-October 2nd. The membership is 2307. The president during the year was Walter S. Landis. The American Institute of Chemical Engineers met twice as usual. Its summer meeting was held in Montreal, Canada, during June 21st-26th and its annual meeting in New Orleans, La., during December 6th-9th. The president during the year was David Wesson. The New York section of the Société de Chimie Industrielle continued its regular sessions during the year. Its president was Dr. L. H. Baekeland.

The Society of Chemical Industry held its 39th annual meeting in the Chemical Lecture Theatre of Armstrong College in Newcastle, England, during July 13th-16th under the chairmanship of Prof. Henry Louis who occupied the chair on account of the illness of John Gray, the president during the year. The membership was reported as 5612 as against 5236 last year. The annual subscription was increased from 30 shillings to 2 pounds, 10 shillings. Prof. Henry Lewis was elected foreign secretary and Sir William J. Pope, president. Montreal, Canada, was chosen as the meeting place for 1921.

INTERNATIONAL ORGANIZATIONS. The third session of the International Chemical Conference was held in Rome, Italy, during June 21st-25th with Prof. Charles Moureu as president. The programme began with the meeting of the International Union of Pure and Applied Chemistry consisting of the representatives of the five nations that founded the union. Canada, Czechoslovakia, Denmark, Greece, Netherlands, Portugal, and Spain were admitted to the Union. Also a plan of organization and administration was adopted, an important feature of which was the provision that every four years the International Conference shall be converted into an International Congress of Pure and Applied Chemistry. The representative from the United States was Dr. Charles L. Parsons.

NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES. The sixth National Exposition of Chemical Industries was held in the Grand Central Palace, New York City, during the week of September 20th-25th. The exhibits numbered 484 and were largely devoted to the exploitation of the growing development of American dyes, although important exhibits of medicines and of paper products were also shown. At its close it was said that "no other exposition of its diversity and magnitude had ever been held in Germany or any other country." Throughout the week lectures on technical subjects connected with the exhibits were given every afternoon and in the evenings there were shown films illustrating chemical processes. More than 125,000 persons visited the exposition, which represents a record-breaking attendance. One important phase of the development of chemical industries

deserves mention. It was said that there "was ample evidence that German chemists and manufacturers already were at work deriding American products, particularly dyestuffs, with the idea that a gullible buying public might be made to provide a 'dumping ground' for German products." It was the belief of the members of the Advisory Board of the Chemical Exposition that "the Germans while working covertly at their programme of tearing down the reputation of American products, would make their first public bid for American chemical markets by thrusting in a large number of exhibits at the Chemical Exposition and other public shows." Accordingly it was decided that "no German firm, nor any American firm with German affiliations would be permitted to have exhibits" in the Seventh Annual Exposition of the Chemical Industries which will be held in New York City in September, 1921.

RELATIONS OF CHEMISTRY TO THE UNITED STATES AND OTHER GOVERNMENTS. It is desirable to mention that the Bureau of Chemistry in the Department of Agriculture is more and more called upon to consider possibilities in factory waste products which have resulted in finding processes by which valuable products may be saved. The difficulty that then presents itself is that of getting the discovery developed commercially. Unless the new process can be offered to the manufacturer well stripped of theory, it is likely to be received indifferently. Accordingly a new "office of development work" was created which has for its function business service. It will act as the go-between from science to industry. A force of trained engineers will take up each fresh project as fast as it has passed the experimental stage in the government laboratories and attempt to develop its commercial possibilities. It will furnish reports covering everything from the source and availability of the raw material supply to plans on the nature of machinery needed, size of plant, capacity of plant, cost of production, and market demand for the finished material.

On October 15th, a joint meeting of the American Institute of Chemical Engineers, the American Section of the Society of Chemical Industry, and the New York Sections of the American Chemical Society and the American Electrochemical Society was held in New York City at which under the title of "Proposed New Departures in Government Chemical Work," addresses were made by Dr. S. G. Cottrell of the Bureau of Mines and Dr. Carl Alsberg of the Bureau of Chemistry, followed by a full discussion of the subject.

Of like character in Great Britain is the formation of combinations or associations of specific trades for the purpose of research work under the Government's plan, whereby \$4,866,500 is made available for industrial research. Research associations have been formed in connection with chocolate, cocoa, sugar, confectionery, jam, boot and shoe and allied trades, cotton, sugar, iron, motor and allied manufactures, photographic materials, Portland cement, woollens and worsteds, scientific instruments, india rubber and tires, linen, and glass industries. The scientific and industrial research department has given its sanction to the formation of similar associations for refractory materials, nonferrous metals, and Scottish shale oil. Other trades or industries whose applications have been made for the de-

partment's approval include launderers, electrical and allied industries, and makers of aircraft. Silk manufacturers, leather trades, master bakers and confectioners, and manufacturers of adhesives have under consideration details of proposed associations. Before any association can come under the government scheme, the approval of the scientific and industrial research department must be obtained, and subsequently a license must be secured from the Board of Trade. The associations must be national in character and include the bulk of the manufacturers in any specified industry. Reports have been received in which similar relations are described to be either at work or under consideration in France, Italy, Belgium, and Japan.

MEDALS. On January 10th, the Perkin Medal of the Society of Chemical Industry was presented to Prof. Charles F. Chandler, the emeritus professor of chemistry at Columbia University. The William H. Nichols medal of the American Chemical Society was on March 5th presented to Dr. Irving Langmuir of the General Electric Company for his paper on "The Arrangement of Electrons in Atoms and Molecules." In recognition and encouragement of his eminent researches in theoretical and applied chemistry, and more especially in appreciation of his process for neutralizing noxious fumes from smelters, the Willard Gibbs Medal of the Chicago section of the American Chemical Society was on May 22d presented to Dr. Frederick G. Cottrell of the Bureau of Mines. On September 27th, the Grasselli Medal of the American Section of the Society of Chemical Industry was presented to Dr. Allen Rogers of the Pratt Institute, Brooklyn, N. Y., for his paper on the "Industrial Uses for the Shark and Porpoise" which was accepted as containing the most useful suggestions in Applied Chemistry during the year. The medal of the Society of Chemical Industry in Great Britain was awarded to M. Paul Kestner, the distinguished technologist of France, in recognition of his valuable contributions to chemical industry.

METALS, ALUMINUM. Owing to the shortage of copper in Germany during the world war, every effort was made to find suitable substitutes and to employ them in the most extensive manner. Aluminum was one of the substitutes which was used to a large extent. In 1904 the total German consumption of this metal was 2000 metric tons; in 1913 it was 10,000 tons. The substitution of aluminum for copper, in the preparation of alloys, and in the manufacture of motor cars and trucks, machinery and utensils, at the end of the war brought the estimated annual consumption of aluminum for these purposes up to 16,000 metric tons; furthermore, 4000 metric tons were used in the manufacture of aircraft explosives, heavy machinery, etc., and 12,000 tons for the manufacture of electrical apparatus, fixtures, and machinery, making a total estimated annual consumption of about 32,000 metric tons. In order to secure sufficient supplies of aluminum it was found necessary not only to promote the building of three factories in Germany, but also to conclude a contract with the Aluminum-Industrie Aktien-Gesellschaft of Neuhausen, Switzerland, for the purchase of a further large amount. This contract is understood to have been so worded that Germany was compelled to accept delivery of a considerable quantity of aluminum during 1919 and 1920, at

a price expressed in Swiss francs. As the German factories are now producing more than enough aluminum to supply domestic requirements, efforts were made to cancel the Swiss contract. After several months of negotiations the Neuhausen factory has effected a compromise with the German War Metal Company, whereby the latter pays the former 11,000,000 Swiss francs in order to cancel the contract.

MAGNESIUM. An interesting statement comes from Norway to the effect that at the new salt works in Bergen by means of electric power applied to the treatment of sea water, 100 tons of metallic magnesium can be obtained annually. As the present total yearly production of that metal is 400 tons, the increase is an important one.

TUNGSTEN. The demand for tungsten during the world war led to the exploitation of the mines in China, especially at various localities in the southern part of the country. With the cessation of hostilities the demand for this metal diminished and up to August, 1919, tungsten ore was wholly an export product. China had no way of utilizing the ore. A plan was formulated for establishing a plant at Hankow for making ferrotungsten, but the proposition was postponed owing to the inactivity of the tungsten market. It is understood that there is a small smelting plant at Dalny, which is in an experimental stage.

It is said that a Norwegian firm worked out during the war a general process for reducing tungstic acid into tungsten powder and molybdenum sulphide into metallic molybdenum. It is claimed that the final products, which are in the form of small tablets, are of superior quality, being free from sulphur, carbon, or oxygen. Also the price for converting the ores into metal is lower than by any other method known.

STEEL. The invention of a new steel, far in advance of any high-speed steel hitherto made, is ascribed to John Oliver Arnold of Sheffield University, England. The inventor, who is said to have been the discoverer of vanadium steel, claims that the new steel possesses valuable and commercial possibilities, that it is unrivaled in hardness, that in tool form it will remove a greater weight than any other steel, and that it possesses comparatively longer life. Later came the information of a similar invention in France for which it was claimed that hard steel-nickel, chromium, manganese, and other kinds could be manufactured at the same cost as ordinary Bessemer steel, with only the added expense of the alloys involved. The process was described as follows: There was an ordinary furnace packed with coal and iron. The metal was fused at a relatively low temperature and then passed to a furnace, where the temperature was raised to 1500 degrees Centigrade and the impurities burned out. By the Bessemer process a relatively small percentage of impurities, chiefly phosphorus and sulphur, is eliminated. The result is that Bessemer steel is suitable for only ordinary work and cannot be employed as raw material for the high grade steel necessary for many phases of industry. The essential feature of the new process is that by the addition of certain secret substances and by means of a certain undivulged process the ordinary Bessemer steel process can be applied to produce steel as pure as that derived electrically. Attention is called to the fact that ordinary Bessemer steel because of the impuri-

ties of the metal, wears badly and irregularly. Hard steel having a much longer life can be made to bear the same strains with very much less content of material and thus the country that is able to produce high grade steel at the cost of ordinary steel will benefit by the immensely increased output. Later came an account of an improvement of the acid Bessemer steel process which aims to reduce the cost of making steel and to decrease the possibility of low quality steel in the process, which was invented by Prof. Richard S. McCaffery of the University of Wisconsin. The purpose of this invention is to use basic material for the lining of the Bessemer converter, instead of the acid lining now used, in order to prevent corrosion of the interior of the converter and to reduce the amount of air pressure and engine power now required. With the basic lining, composed of lime, magnesite, dolomite, oxide of iron, or the like, McCaffery believes that it will be possible to use lower pressure and cut down the time of blowing about 30 per cent. His invention is based on his discovery of the formation, character, and action of certain oxides formed by the air blast blown into the molten iron. The acid Bessemer process is now carried on in a converter with an acid lining, on the theory that this reduces corrosion by the acid slag that is formed. He has found, however, that the acid slag floats to the top and that the serious corrosion of the converter bottom is caused by oxides which are formed by the air blown into the converter and which, being basic, corrode the bottom. To prevent this corrosion, he proposes different kinds of linings for various acid Bessemer converters and describes the particular parts of the converter that require such a basic lining, while the remainder of the converter has an acid lining to resist corrosion by the acid slag.

POTASSIUM. The result of the war has broken the former German world monopoly of potash, since by the terms of the Peace Treaty the 13 Alsatian works passed into the control of the French state. Although the output of Alsace, as compared with that of Germany, is relatively small, it is nevertheless important enough to affect prices on the world market. During 1919 Alsace produced 40,000 metric tons of potash, while the output for 1920 was five times that amount. The total sales of the German potash syndicate during 1919, in which 198 works participated, amounted to 812,000 metric tons of potash, and the output is capable of great development. Concerning this newly arisen competition it is said that neither in France nor Germany has the producing industry any interest in lowering prices by competition. In view of present economic conditions, it is to the benefit of both countries to develop their export at the best possible prices. An agreement between France and Germany as to potash prices would therefore be to the advantage of both. Negotiations by Germany with France with the object of coming to an agreement regarding the Alsatian potash industry have been entered into. On political grounds, and in consequence of the unfavorable state of their currencies, sales by Germany to Poland and Czechoslovakia have almost entirely ceased.

The following report of a process for the collection of potash from cement dust in the course of the manufacture of Portland cement comes from Dalen, Norway. The new potash factory

was originally planned as a means to dispose of the dust which arose during the process of making cement. It is in close proximity to the smokestack of the cement factory. Potash-holding particles contained in the cement dust are carried out with the smoke and caught and separated. A trap-door arrangement forces the smoke into the potash factory, where it is conducted by means of a tube into the upper story of the factory. The smoke is then forced into a series of smaller tubes, in which it is subjected to an electric current of about 70,000 volts, the result being that the particles of dust are attracted to the side of the tubes or the electric wires placed in the tubes. At certain intervals the tubes are pounded so that the accumulations of dust descend into large bins, from where the dust is sacked, ready to be placed on the market immediately. The output of the factory will be about 30 tons a day, and in time will be able to satisfy a large part of Norway's requirements. The potash is not entirely clean, since it is mixed with cement dust which contains a high percentage of potash. The other ingredients are also of importance for agricultural use.

NITROGEN. It is interesting to note that the final report of the British Nitrogen Products Committee recommended the framing of a co-ordinated policy for safeguarding the future nitrogen requirements of the Empire, and urged that this should be done by imperial authority. It was suggested that as the existing information as to future prospects and possibilities will require to be supplemented before such a policy can be framed, advisory bodies should be set up to examine the local aspects of the nitrogen problem and to furnish the imperial authority with the requisite data. Great stress was laid on the vital importance of establishing electro-chemical and other key industries in India and it was recommended that where secret or very highly specialized processes of manufacture were involved the government should take steps to facilitate their introduction. As to the value of government subsidies doubt was expressed as to whether the great iron and steel works at Jamshedpur would have been in existence to-day on so vast a scale and have been so invaluable an asset in the war if government encouragement had been merely passive. Indirect assistance took the form of both railway construction and facilities, and of guaranty to take a minimum tonnage of the output coming up to a prescribed standard.

AMMONIA. The industrial use of pressure above a 1000 atmospheres in the production of synthetic ammonia, something never accomplished except by the Germans, was promised in a paper read before the Academy of Science in Paris by Prof. George Claude, who said that in the near future he would show a small installation plant capable of producing 200 litres of liquid ammonia daily. He said he was able to get 20 times as much ammonia from the same amount of primary matter as was produced by the German chemist, Haber, by the latter's method. From Italy came the information in April that an American had secured from the Italian government a concession for the utilization of 800 horse power of the waterfalls at Terni, about 70 miles from Rome, and who maintained that he could turn out nitrogenous plant food for the Italian farmer at a cost as low as 1 lira a kilo. The process does not require coal or any other

material except air and water. It is extremely simple and works automatically without expense for attention, energy, or material. It forces a mixture of nitrogen and hydrogen through catalyzing tubes at a pressure of 250 atmospheres, resulting in the transformation of the two gases into pure ammonia. The special and secret feature of the process is the discovery of a catalyzer which produces the remarkable results described. The ammonia produced is condensed into liquid form by a refrigerating apparatus and drawn off in steel cylinders. It is put on the market in these cylinders at prices which are said to be 100 per cent above the cost of production. The whole apparatus, aside from the cells for producing the hydrogen, easily can be made to occupy a space of about 625 square feet. A syndicate was formed in London, England, with a capital of £5,000,000 to establish a nitrogen factory for the manufacture of ammonia synthetically, from the nitrogen of the air. A site was purchased in Durham which the British government acquired for the purpose of building a factory. The process to be used will be that of the German chemist Haber. Nitrogen and hydrogen will be combined into ammonia, under pressure at a high temperature, the ammonia then being converted into nitric acid, or other nitrates, as may be required either for the manufacture of explosives or for use as fertilizers.

FUEL. Peat continues to be the most available substitute for coal. This may be shown from an account of the Irish peat industry in which it is said that at least 1,500,000 of Irish people depend for their fuel supply on peat alone, the annual consumption amounting to about 7,000,000 tons, equivalent to 3,500,000 tons of coal. Also there are about 4,750,000 tons of coal used each year, of which 90,000 tons represents the average annual output of Irish mines. With regard to the winning of peat in Ireland, it may be true that formerly peat could, on the small scale, be won more cheaply by hand than with machinery, because the proper methods had not been developed and cheap labor was available, but with the recent improvements in mechanical excavating and handling apparatus this is no longer so. The output of peat won by hand for each person is 130 tons a year; where mechanical means are availed of, this figure is increased to 230 tons. As the latter figure is only the calorific equivalent of 115 tons of coal, and as the output for each operative employed in the mines is 130 tons in six months, the necessity of increasing the output of peat by the use of every mechanical device is obvious. Interesting trials to test the possibilities of peat as fuel for locomotives have been in progress on several railways in Sweden. The reports show favorable results. One railroad in Southern Sweden has found peat so practical for steam purposes that the management believes the road can dispense entirely with coal. The State Railways have likewise been testing peat for steam purposes, with good results, and have on a limited scale adopted it for fuel. For some years the State Railways have been operating a factory for the production of peat powder, which is said to make an excellent fuel. In Sweden, where there are 10,000,000 acres of peat bogs, with an average depth of 6.6 feet, the substitution of peat for coal would add enormously to the national wealth. Every acre of peat bog yields nearly 1000 tons of prepared peat. The reduced coal supply in Germany is causing the greatest

attention to be directed to any suggestion as to a possible improvement. The great turf moors and shale beds yet available for exploitation in Germany are a source of much interest. A belt of shale is traceable in the southern parts of Hanover, through Brunswick, and passing close to Darmstadt into Wurttemberg. A careful estimation places the possible production of shale at 13,000,000,000 tons, and that of combustible turf at 5,000,000,000 cubic meters. The great key to solving the problems of heating from these sources would be a system of gas manufacture. In Italy, lignite is finding increasing demand. In 1908 the production of this fuel was 480,029 tons as compared with 2,216,583 tons in 1918. Before the war the amount of lignite existing in the subsoil of Italy was estimated at about 100,000,000 tons. Researches by the government mining corps, and by experts have shown that the amount of lignite in the deposits up to now explored may be estimated at about 270,000,000 tons. A new Australian syndicate has been registered in Melbourne to mine, process, and deliver to prospective customers throughout the commonwealth pulverized lignite, or brown coal, which, it is claimed, can be used for steam generation or metallurgical purposes with most satisfactory results. The syndicate controls various brown-coal deposits throughout Victoria, said to contain over 250,000,000 tons, and mining operations are under way. The most striking improvement in the new method of treating lignite, known as the "Buell system," is the means of air-drying at the mines, whereby the moisture content is reduced from 50 to 25 per cent in seven days. After the lignite is mined, the coal is crushed to egg size and then hoisted to the air-drying tipples at the surface by bucket conveyors. After drying about seven days, the coal is relieved of practically half of its moisture content and is ready for final treatment which consists of again crushing the coal (to about $\frac{1}{2}$ -inch mesh), after which it is passed through a rotary drier, where the moisture content is reduced to about 10 per cent. The fuel is then pulverized, separated by air, and stored in bunkers. For use, it is blown through pipes, where it is mixed with air containing 10 per cent in excess of requirements and ignited at the tip of an adjustable burner, which enables the length and width of the flame zone to be accurately gauged. Boiler tubes and baffles are kept clear of ash by soot blowers, and suction conveyors carry off the ash to any desired place of disposal. Three per cent of the power generated is required to operate the plant, and one experienced man can fire a whole battery of boilers or kilns. Shale is now being employed in Esthonia for all manner of purposes; thus the gas factory in Reval is using it exclusively for producing gas. It cannot be burnt as fuel in fire boxes, not as they are constructed at present, because of the large quantity of ash, and the factory, therefore is using wood as a fuel. The quantity of gas obtainable from the shale is greater than from coal. The Reval factory has obtained up to the present 120,000 poods of shale. The Port-Kunda cement factory has recently purchased 60,000 poods from the Ministry of Trade and Commerce and has a similar amount ordered. It is intended to employ shale mixed with 50 per cent of coal dust in the manufacture of cement. Experiments in firing locomotives with shale have given very satisfactory results, and the railway shop in Reval is

now reconstructing the fire box on an engine with the intention of employing shale as fuel. During an excursion to the island of Naissaar, undertaken by a commission in order to acquaint themselves with the local conditions, shale was employed exclusively as fuel in place of coal. The experiment turned out quite satisfactorily, a head of steam being obtained equal to that when coal is employed. The difference in cost is remarkable, the price of coal at present being 30 marks a pood and that of shale only 3 marks, so that even if the consumption be more than double, a great saving would be effected. The engineers are of the opinion that when the boxes are made suitable for the employment of shale, it will be much cheaper to use this fuel than coal.

It is reported that war-time experiments in Germany showed that the distillation of lignite at high temperature gave a liquid coal tar which contained certain ingredients suitable as a substitute for gasoline, kerosene, and lubricating oils. Through a new process benzine and kerosene can be obtained from liquid coal tar, which has been distilled from lignite at a lower temperature, and all industries using lignite are urged to set up facilities for generating this liquid coal tar and thus secure synthetic products to supply the lack of the natural products. Colloidal fuel, a composite of pulverized coal and oil, giving ships a wider cruising radius with increased boiler efficiency, was invented by Lindon W. Bates. It has equal or superior steam-making power to the unit of volume compared with standard navy oil fuel and saves from 25 to 35 per cent of expensive oil fuel by incorporating coal into a treated composite where it will remain in a state of suspension. Colloidal fuel requires no different equipment from that now in use on oil-burning ships. It may be made with the smaller sizes of coals too fine to be fired on grates. Thus earth crushed anthracite and washings from rivers may be utilized. It is the most compact fuel known. While oil contains about 148,000 British thermal units a gallon, an average grade of colloidal fuel, made with bituminous coals, contains 160,000 thermal units and grades may be made containing over 180,000 thermal units. In regard to cost, colloidal fuel can compete with straight oil when the cost of oil is over 2 cents a gallon and coal at its usual price. Another invention of this character recently introduced into the United States consists in the introduction of sulfite coal as a by-product from the manufacture of wood pulp. A ton of wood pulp yields 9 to 10 cubic meters of sulfite lye, of which 95 per cent is available for the production of coal, compared with about 60 per cent from other processes. It is estimated that it is possible to produce annually sulfite coal equivalent to 800,000 tons of imported coal. Considerable quantities of cheap alcohol are produced from the wood pulp lye before it is made into coal. An essential feature of the new process is high concentration of the lye before removal from the autoclaves. By concentrating it to 30 per cent, not only is a high percentage of coal-producing substance obtained, but the quantity of solid matter is increased by 50 and even 70 per cent.

MOTOR FUELS. In September it was announced that a gas possessing explosive qualities sufficient to drive an automobile and which might also be used for illuminating was being produced at the Arlington experimental farm of the Department of Agriculture from the distillation of

ordinary field straw. The tests with various straws were continued and efforts made to work out a model plant for the distillation of the gas. Fifty pounds of straw will produce about 300 cubic feet of gas, and the problem of liquefying or condensing the gas in order to enable it to be used practically as a motor fuel is now in process of solution. If a suitable unit can be constructed so that the farmers' initial cost will be small, it seems likely that straw gas may have a certain economic value in sections of the country where the raw material is considered as waste and is burned or left to rot on the fields. The high prices and increasing demand for gasoline have led to experiments in England for a suitable substitute motor fuel, and the British government is conducting wide researches to discover a liquid fuel that will combine satisfactory features from both a scientific and a practical viewpoint. Omnibuses were successfully run in Paris on a mixture of benzol and alcohol. Benzol being a coal-tar product resulting from fractional distillation and usually extracted or "washed" from coal or household gas, the supplies of benzol are dependent on the supplies of bituminous coal and habitually contingent on the good will of the gas companies. The alcohol used was extracted from vegetable matter, and consequently there is no limit to the available supply. The experiments have contemplated a liquid fuel containing as large a proportion of alcohol as possible. Nevertheless, it appears that neither benzol nor alcohol burns so quickly as gasoline, and the use of a mixture will necessitate the structural modification of the ordinary gasoline engine. It is reported by the London Automobile Association that natalite (See YEAR BOOK for 1918, p. 128) a new motor fuel, is well spoken of, and has had many favorable reports upon its practicability as a gasoline substitute. It is a by-product of the Natal sugar industry, and is reported to be a mixture of power alcohol and ether, capable of great development, in view of the large tracts of waste vegetation available in South Africa. In addition to natalite, which is made in Natal from the refuse of the sugar-cane mills and used as a motor fuel in South Africa, there has recently been produced another motor fuel to meet the shortage and high cost of gasoline in that country. The basis of this new fuel, which is called "acetol," is alcohol and ether, which comprises 90 per cent. The other ingredients are secret. It is said that this fuel apparently solves the question of the air-cooled engine. No carbon sediment is formed in the cylinder, and the fuel is claimed to be a non-injurious to the carburetor and engine. No special carburetor is required. Acetol mixes with gasoline. The inventor claims that it has a wider explosive range than the ordinary marketed gasoline, that is, both a weaker and an over-rich charge in the cylinder heads will fire when gasoline fritters out or chokes. It is said that acetol can be manufactured much more cheaply than the present cost of gasoline in South Africa. There is a movement in Australia to endeavor to replace petrol, which is used for internal-combustion engines, by industrial alcohol, attention having been called to the fact that in Natal a patent spirit called natalite is being marketed at a price much below that at which petrol can be sold. There are, it is claimed, opportunities for utilizing vegetable products in that country from which alcohol can be distilled, producing an industrial spirit at

prices much below those at which petrol is now being sold. Provided works are established near, it will be found a profitable enterprise for farmers to grow certain crops, which can be designated, for the production of industrial spirit.

ALCOHOL. The extraction of alcohol from coke-oven gas on a commercial scale was proved possible at a meeting of the Cleveland Institute of Engineers at Middlesbrough, England, by Ernest Bury, who showed that he had succeeded in extracting ethyl alcohol and its derivatives. The practical working of Mr. Bury's process at the Skinningrove plant, where 5800 tons of coal are carbonized a week, revealed an average yield of 1.6 gallons of alcohol to the ton of coal carbonized.

DYESTUFFS. The coal tar color industry has become so firmly established in the United States that it would require a special article to describe its development. That this is a fact is shown by a statement in the autumn by the Bureau of Foreign and Domestic Commerce that the exports of aniline dyes amounting to \$10,183,948 in the fiscal year 1919, has been increased to \$17,130,397 in 1920, a gain of 68 per cent. With the return to peace it is evident that whatever the demand for dyes made in Germany may be, that country will never regain its lost supremacy in the world trade in dyestuffs. The United States was first to establish a domestic industry sufficient to meet the demands of the home market. This was done on private initiative and capital. The British government has established a definite policy, backing it financially, to develop this industry and maintain it so that England will not again be dependent on outside sources for its colors and dyes. Although the British production is constantly increasing, it has not been able to overtake the increasing demand. A recent estimate gives the total output as equal to about 80 per cent of the dyes actually consumed in the United Kingdom. France, Italy, and Japan are producing some dyestuffs, but due to lack of raw materials and to other difficulties incident to establishing the manufacture, these countries can not yet supply their own textile factories with the quantity and variety of colors needed. Germany, it is now conceded, will not be the strenuous competitor she was formerly in the foreign trade. Switzerland is the only country, other than the United States, now making aniline colors sufficient to meet its own requirements and to export on a large scale, and the Swiss are dependent on other countries for the raw materials. The condition of indigo is of interest. Imports of natural indigo declined from 996,069 pounds, worth \$1,242,885 in 1919, to 126,539 pounds, valued at \$165,332 in 1920; but the imports of synthetic indigo increased from 594,107 pounds, invoiced at \$308,582 in 1919, to 1,014,100 pounds, valued at \$530,285 a year later. This was expected, as synthetic indigo is superior commercially to the vegetable product, the color being more even, and the cost of production prior to the war less than that of the natural indigo. As the bulk of the synthetic product was made in Germany, when imports were cut off by the war, the trade in the natural product revived, but will not be able to hold its place under peace conditions in competition with the synthetic indigo, more especially as the latter is now being produced on a commercial scale in the United States. It is announced that after experimenting for two years the British Dyestuffs Corpora-

tion has discovered at its Huddersfield laboratories the secret of manufacturing alizarin cyanine green on a commercial scale; which dye was discovered in 1894 and was made exclusively by Germany before the war. Its special characteristic is that when applied upon wool, chromed or unchromed, fine green shades are produced which remain fast.

PAPER. The output of the paper-making industry throughout the world continues below the requirements for the numerous purposes to which paper is at present applied, due to the great scarcity of paper-making raw materials. In Great Britain the sources of supply have been from Sweden and Norway, but in these countries there is a short supply of wood pulp and the high cost of labor in forests and in pulp factories has greatly increased the price of pulp. The United States gets its paper largely from Canada, but there is not enough to supply the demand. In Germany manufacturers have been forced to increase the price of paper to an amount where the demand is seriously affected. Straw is now being largely used in that country as a source of paper. From India it is reported that grasses have been studied in the Forest Research Institute, but certain practical difficulties persist so that while these grasses promise a large source of supply for the future, they cannot at present be recommended as a practical proposition. Eventually the difficulties will be overcome, but at present the field for a new source of supply is held by bamboo. It can now be said that there remain no practical difficulties in transforming bamboo into pulp; and that there is the promise of a large supply under conditions which, compared with a material like wood, are permanent, for while wood takes from 30 to 50 years to grow, bamboo renews itself annually. Other sources that have been mentioned during the year include papyrus, which grows in great abundance in the Belgian Congo, principally along the lower Luabala River. It is planned to establish near the river a large plant which will have an initial production of 20,000 tons of pulp. In Spain, paper makers are turning their attention more and more to esparto to supplement the import supply. From England there is information that a new process for making paper out of peat pulp has been invented by A. L. Burlin, who announced at the Manchester College of Technology that the various kinds of paper he has produced by his process, which depends upon freshly cut peat containing 75 per cent of moisture, consist of colored packing paper, sugar bags, wall papers, bookbinders' cloth paper, artificial leather, cream and white paper. Plans for the establishment of a large paper mill in Southern Saskatchewan to utilize the vast quantities of waste straw in the province are reported. A new process of making paper has been discovered by a German inventor who uses the rank grass that grows in swamps. He claims to have made the best quality of craft paper from the leaves and stalks of these plants, and the highest grade of art paper from the roots, from which sugar and alcohol also are obtained. The company holding the patents have received a contract from Roumania to clear the river banks and beds of swamp grass. For this it is being paid by that government and it will use the grass thus obtained for the manufacture of paper.

DIAMONDS. It is reported from Germany that the firm of Alfred Nobel, formerly makers of

dynamite and other high explosives, are manufacturing synthetic diamonds. No details are available as to the nature of the process, though it is believed to differ considerably from those previously known. Not only have many diamonds of good size been produced but it is claimed also that the cost is such that it will be possible to make them profitable. In quality the artificial stones are said to be equal to any which come from mines. An important discovery of diamonds comes from the Gold Coast of Africa, somewhere on the eastern side of the Abomo Su on the road from Asumafa to Abomoso. The diamonds were found in panning gold and concerning their origin it is said that the general character of the diamondiferous gravel and the concentrates therefrom suggests their derivation from a granite-pegmatite area, but much of the quartz and the gold are undoubtedly of local origin. Much more work needs to be done before the origin and full distribution of the diamonds can be proved, while their economic value can be ascertained only after inspection by diamond appraisers.

ARTIFICIAL SILK. The scarcity and high prices of silk and other textiles are the cause of a renewed impetus that has been taken in the fabrication of the chemically produced textile material known as artificial silk. There are five kinds of artificial silk: nitrated silks, collodion silks, viscose silks, acetate silks, and gelatine silks. At Lyons, France, a renewed interest was given to the use of chemical textiles by the invention of a new process, the product of which is called silk cellulose. This form of cloth is claimed to possess a brilliancy comparable to silk, a remarkable solidity and durability, a touch similar to silk, and absolute imperviousness to water; at the same time it is no more endangered by fire than the ordinary natural silks. While the thread of the viscose silks is relatively coarse and thick, the new silk permits making threads of considerable fineness and is particularly remarkable for the quality of velvets that can be made from it. The new process differs radically from the old processes. Instead of converting a thick liquid (the viscose) into thread, it appears that it is possible to preserve the wood fibres and convert them into a brilliant and solid cellulose. As a result of this there is obtained a greater molecular concentration and a regular geometric form in the elements that make up the thread; all of which greatly increases the strength and durability of the cloth. The Dupont Company and the Comptoir des Textiles Artificiels of Paris have entered into an agreement for the formation of a new company for the manufacture of artificial silk, it was announced in April, to be known as the Dupont Fibre Silk Company. The manufacture of artificial silk is being undertaken in Spondon, near Derby, England. Samples of silk thread produced there have been submitted to weavers, who say that it is of such texture and quality that when converted into articles of clothing they will have the appearance and finish of natural silk. When fully developed this factory will produce nine tons of artificial silk a day. Other products which the company is manufacturing, or intends to manufacture, include non-inflammable films, synthetic perfumes, and aspirin. Announcement has just been made that an Italian company will soon begin the construction of new plants for the manufacture of artificial silk. These plants will

probably be located at Turin, Naples, Orbasano, and Bra. In the first two instances sites have already been purchased, and it is expected that they will give employment to 10,000 workers. The artificial silk factory at Tomaszow, Poland, was founded before the war and manufactured silk with the aid of collodion, the fundamental raw materials of which are cotton, ethylic alcohol, ethylic ether, and sulphurous and nitric acid. Great obstacles have been met with in the re-starting of the factory, on account of the lack of raw materials in the home market. The pre-war output amounted to 1500 kilos of silk daily and was steadily increasing. The factory will employ upward of 1000 hands and will bring a considerable amount of foreign money into the country, as large quantities of silk will be exported. It is proposed to start with an output of about 500 kilos a day.

EXTRACTING WOOL GREASE. A plant has been established in Melbourne, Australia, for exploiting a new process of extracting grease, the base of lanoline, from wool, and for the manufacture of special neutral wool-scouring and other soaps. In the new process no sulphuric or other acid is used, and the product is wholly animal and pure. The process has been tested sufficiently to prove that by it lanoline can be produced in commercial quantities at a very low cost.

RUBBER. It is reported that the discovery of a new process of vulcanizing rubber has been made in the Manchester, England, College of Technology. The importance of the discovery is in the fact that it is a method of cold vulcanizing. It makes use of two gases, hydrogen disulphide and sulphur dioxide, which react on each other to produce water and free sulphur. It is found that when crude rubber, either in a solid form or in solution, is treated with these two gases the sulphur produced by their interaction vulcanizes the rubber.

SUGAR. The failure of the Central Europe crops of beet sugar owing to the world war, naturally led to efforts for its cultivation elsewhere, and early in the year the movement toward the production of beet sugar in Great Britain assumed more definite shape. A corporation was formed with a capital of £1,000,000, of which half was issued. The British government took a small block of stock and guaranteed a dividend of 5 per cent for 10 years upon private capital invested, and will receive no interest on its own investment until a 5 per cent cumulative dividend upon such capital has been realized. The factory will be at Kelham, near Newark, where a site has been secured. With the government support as above mentioned, there is no reason why the enterprise should not prove a success. That the production of sugar from the sap of the nipa palm, a tropical plant growing over extensive areas, is commercially possible, was developed by laboratory experiments conducted at the Bureau of Science, Manila. The industry is in an experimental stage in the Philippines, but from the experiments made it is estimated that there would be at least 12 per cent of recoverable sugar in the sap, and the average annual yield of 4000 gallons of sap an acre under management should produce about 4000 pounds of sugar. Nicolas Kopeloff and Mrs. Lillian Kopeloff, bacteriologist and assistant bacteriologist at the Louisiana Sugar Experiment Station in New Orleans, by making bacteriological examinations at every stage of the sugar-making

process, have found that sugar deterioration can be prevented by substituting dry or superheated steam for water in the final process of washing sugar in the drums in which sugar is dried. These centrifugals in their whirling suck up air from the floor which may be contaminated with germs. It is also common practice to make the color of the sugar lighter by washing the crystals with water, which may be contaminated with molds and bacteria. It is found that dry steam is successful in killing over 99 per cent of these avid molds and bacteria. While the practice of steaming sugars is not a new one, the results are shown to have a direct practical value in eliminating losses. Fully 1 per cent of the Cuban crop, or about 70,000,000 pounds of sugar a year, and worth at least \$1,600,000, it is estimated, has been destroyed by the tiny organisms which may be eliminated by the proposed method and the product saved.

MALT SUGAR SYRUP. While malt sugar has been known to chemists its production on a commercial scale is now beginning. The shortage of sugar has developed a market for it and the prohibition law has made available both the raw material and the machinery needed for its manufacture. Malt sugar syrup is made from the same grains as beer, and may be made from corn or potatoes or any plant containing starch. Barley, which was used until recently in the manufacture of beer, can be used now to produce malt sugar syrup. Up to a certain point the process of making malt sugar syrup is the same as the process for making beer. Evaporating pans are the principal additional equipment required by brewers. The product looks like maple syrup. It can be used for everything that cane sugar is used for. While its use may be not quite as convenient as sugar, it is a most excellent substitute for table use when sugar is not to be had, as it not only provides sweetness but is equal to sugar in food value. For cooking and baking and for making candy it is not only equal to sugar in convenience and food value, but is superior for some uses because it will not crystallize so readily.

FURFURAL. A substance obtained from corn cobs that can be made into a great many dyes, several paints, lacquers and other useful commodities, is the result of experiments made by the Bureau of Chemistry of the United States Department of Agriculture to discover the best methods for the utilization of corn cobs. Furfural has been a comparatively rare product, and was sold chiefly in small quantities for scientific purposes. Specialists of the Bureau of Chemistry say that it can be manufactured from corn cobs at a cost of perhaps 15 or 20 cents a pound. The previous scarcity and high price have prevented commercial use of furfural to any considerable extent. Its most important known use is, as an intermediate for dyes. A whole series of dyes may be prepared by interaction with various coal-tar products. Shades covering a very wide range have already been made and tested. A plant handling 100 tons of cobs a day would recover about a ton and a half of furfural as a by-product. A considerably larger quantity can be obtained from the corn adhesive by a comparatively simple process.

MANUFACTURE OF GLYCERIN. A war secret that has come to light is the following description of a German patent: The transformation of sugar into glycerin was accomplished by the

biochemical method. It had been known for a long time that in the ordinary fermentation of sugar with yeast small quantities of glycerin would be produced, amounting to about 3 per cent of the sugar. By adding alkalis to the liquid in fermentation the production of glycerin was increased. It was found that almost any salt with an alkaline reaction could be used for that purpose. Experiments were made with sodium acetate, bicarbonate, and dibasic phosphate, and with ammonium carbonate. The yield of glycerin was increased to 12.7 per cent, but the alkaline mash was found to be an excellent breeding place for all kinds of acid-forming bacteria which would pollute the glycerin. This was remedied by the use of sodium sulphite, which acts as a poison to the bacteria of lactic acid and others, but does not, even in large quantities affect yeast cells. When sodium sulphite was employed as an antiseptic the yield of glycerin was increased proportionately to as much as 23 to 36.7 per cent of the sugar.

A NEW SOLVENT. A new chemical reagent has been worked out in the chemical laboratories of the University of Wisconsin and its discovery announced by Victor Lenher. The new solvent is selenium oxychloride, and it is made of a commercial by-product which now goes to waste. As a chemical reagent this substance possesses the property of acting as a solvent for some of the most insoluble substances, as rubber, asphalt, and the bituminous material in soft coal. It is an excellent solvent for the unsaturated hydrocarbons, such as acetylene, benzene, toluene, etc., which dissolve readily in it, while paraffin hydrocarbons, such as gasoline, kerosene, and the mineral waxes, vaseline and paraffin, are unaffected. The vegetable oils are acted on, many with violence, and linseed oil forms a thick mucilaginous and rubber-like mass.

LITERATURE. The development of a greater interest in chemistry in Canada, the result unquestionably of the organization of the Canadian Institute of Chemistry in 1919, has further resulted in the publication of a *Canadian Chemical Journal* in Toronto.

CHESS. Jose R. Capablanca captured the world's chess championship in 1920 as the result of forfeiture on the part of Dr. Emanuel Lasker of Berlin after they had signed articles to meet at Havana, Cuba. Following this occurrence Capablanca went to Europe in an endeavor to get the famous master to change his mind, carrying with him the offer of a purse of \$20,000 subscribed by admirers of Capablanca. Negotiations were going along smoothly when suddenly Dr. Lasker made financial demands that it was impossible to meet.

In the United States the game received a new impetus through the visit of Samuel Rzeschewski, the Polish child prodigy, who gave several marvelous exhibitions of his skill, notably at West Point and later in New York City.

Frank J. Marshall won a masters' tournament held at Atlantic City, Charles Jaffe finishing second. The New York State title went to Jacob Bernstein. Columbia University carried off the laurels in a college competition with Harvard, Yale, and Princeton while in the Triangular College Chess League Cornell triumphed over the University of Pennsylvania, City College of New York, and New York University.

CHEVROLET, GASTON. Champion automobilist was killed at Los Angeles, Cal., November

25. His death occurred at the Los Angeles Speedway in the course of the 250-mile race for the 1920 championship, which he had won at the moment of the accident. He was born in France, Oct. 26, 1892, came to the United States in 1901, and worked in the automobile industry at Detroit, Mich., till the outbreak of the war, during which he was assigned to duty there. He entered the races as a mechanic in 1912 and won the second place in the 100-mile contest at Kalamazoo, Mich. He finished in nine races in 1915. At the Kansas City race of July 22, 1917, he broke his arm and did not race again until 1919, when he entered two races at Sheephead Bay, in New York.

CHICAGO, ILL. See CITY PLANNING; MUNICIPAL GOVERNMENT.

CHICAGO, UNIVERSITY OF. An institution of higher learning founded in 1891 at Chicago, Ill., largely through gifts by John D. Rockefeller, who has continued to aid the university. In the summer session of 1920 there were enrolled 2080 graduate students, 1402 undergraduates, and 2150 professional students, a net total of 5406. In the autumn of 1920, the enrollment was as follows: Graduate, 670; undergraduate, 2713; professional, 1620; university college, 1306; a net total of 5988. There were 377 members of the faculty. Productive funds of the institution amounted to \$28,364,303.51 and the income for the year was \$3,329,114.27. The library contains 599,492 volumes. President, Harry Pratt Judson, LL.D.

CHILD LABOR. During the war and also during 1919 child labor increased to a large extent owing to the scarcity of labor in carrying on the war, but after the war when employment was getting harder to find, it was expected that child labor would decrease. This has not proved true, although it has not increased in 1920. At the end of the year fewer permits were being issued for child labor and it was expected that during 1921 it would decrease materially. In its international aspect the problem was handled by the International Labor Office of the League of Nations at Geneva, Switzerland, and progress was reported from a number of countries that have passed laws restricting child labor. This has taken the form of compulsory attendance at schools up to age of 14 to 16, the restriction to an eight-hour day which affects both adults and children, and the prohibition of night work for workers under 14 to 18 years of age.

FIFTEENTH NATIONAL CONFERENCE ON CHILD LABOR. On April 15, 1920, the Fifteenth National Conference on Child Labor convened in New Orleans for the purpose of considering "The National Child Labor Committee at Work." The speakers told of the work of the committee and in most cases suggested further steps to be taken, and increased effort in certain directions. Mr. Wiley H. Swift in the course of an address said: "We began to study intently life in the back country, the rural child, and our discoveries have been astounding. The problem of child care in this country is not primarily a city problem. It is a rural problem. We are brought to a very deep realization of the fact that an intelligent handling of the question of the employment of children demands: (1) That the rural child be included. It is as much a crime to work a child to his hurt on a farm as in a mill. (2) That steps be taken to insure good health of children. It is a bad thing to have a sick child go to work

in a mill or a store. (3) That proper schools be provided and that children be placed in them. Ignorance is ignorance whether in the city or in the country. In either place it is a weight hanging to the feet of liberty. (4) That provision be made for the best care of all defective, neglected, dependent, and delinquent children." The other speakers more or less emphasized the same points. It seems that the realization of conditions of child labor in rural communities has just been reached, and that the principal effort of the committee will be extended in that direction during the coming year. The 16th annual report of the committee for the year ending Sept. 30, 1920, shows that its work during that period has had its principal success in Kentucky. The committee made an investigation of the child labor conditions in that State and then made a report to the Legislature which was acted upon favorably. See *State Legislation* below. Investigation of conditions in Tennessee was also carried on at the invitation of Governor Roberts, and report made. This report will be acted upon at the next session of the Legislature.

FEDERAL LEGISLATION. The Supreme Court has not yet handed down a decision on the constitutionality of the Federal Child Labor Taxing measure which it has under consideration. A previous law was declared unconstitutional in 1918. The new law contains substantially the same prohibitions, but enforcement is effected through the Federal Taxation Power. (For a summary of this law see YEAR BOOK for 1919.) It is entirely uncertain as to what the decision of the Supreme Court will be.

The President's Industrial Conference of December, 1919, and January, 1920, in its report, "urges upon all States not having adequate legislation upon child labor and compulsory education that they give these topics prompt and sympathetic consideration." Also, that "the fact that the former Federal child labor law has been declared unconstitutional should not be interpreted as registering or encouraging popular sentiment against such legislation, but rather as occasion for arousing public sentiment in the interests of the rights of childhood."

STATE LEGISLATION. The most important legislation of the year was in Kentucky where (1) The Governor appointed a Children's Code Commission as authorized by statute and the commission is now at work. (2) The total appropriation for the State health work was more than doubled, and a bureau established to promote county organization. (3) Resolutions were passed as a step toward amending the constitution in such a way that the offices of State Superintendent of Public Instruction and County School Superintendent can be taken out of party politics. (4) The child labor and compulsory education laws were improved in several important respects. (5) A Board of Charities and Correction was created. There had been none before. (6) A Domestic Relations Court for Louisville was created. In Alabama the appropriation for the Child Welfare Department was increased from \$12,500 to \$30,000. Louisiana passed a bill to provide for mothers' pensions. Massachusetts prohibited the operation, cleaning, or repair of freight elevators by children under 16 years. Mississippi made compulsory school attendance a State-wide measure, and increased the required school term from 60 to 80 days a year. New York created a children's code com-

mission to revise and standardize child labor laws of the State, and extended medical inspection provisions to include children employed in mercantile establishments. Virginia passed a measure providing for an eight-hour day for children under 16 years in canneries, factories, mercantile establishments, etc. Measures considered unfavorable to the child labor movement as lightening the restrictions on child labor were passed in Delaware, Maryland, and Virginia. Due to the fact that only 11 of the State Legislatures convened for regular sessions during 1920, State legislation on child labor has been comparatively small. A great many of the legislatures will be in session early in 1921 and a number of bills dealing with this matter will be presented at that time.

CONDITIONS OF CHILD LABOR IN THE UNITED STATES. Reports for the first six to eight months of 1920 from 27 States show the following statistics. A decrease in child labor is reported in Alabama, District of Columbia, Florida, Kentucky, Maine, Missouri, New Jersey, South Carolina, Washington, West Virginia, and Tennessee. Increases are reported in Connecticut, Illinois, Iowa, Kansas, Louisiana, Maryland, Minnesota, Nebraska, New Hampshire, New York, Pennsylvania, Texas, Wisconsin, Oklahoma, and Vermont. In Boston, the only Massachusetts figures now available, there was an increase of 14 per cent in the number of children going to work up to June. Since then there has been a decrease of 17 per cent over the same period last year. In five of the 10 States reporting a decrease a change in child labor or school laws is given as the reason for the decrease. Florida: enforcement of child labor law and the compulsory education law have resulted in decrease. Maine: new school law which went into effect July, 1919, has resulted in decrease, but the exceptionally small amount of child labor at present is partly due to the closing down of industries. Missouri: the new continuation school law together with enforcement of Federal law have resulted in the decrease. South Carolina: steady decrease since 1914 in cotton mills is due to State 14-year limit, and enforcement of Federal law. In 1914 there were 8380 children in South Carolina cotton mills alone, 3435 of them under 14. In 1920, according to the state factory inspectors, there were only 3721 children in the mills, none of them under 14. The total cotton mill population has increased by 13,000 since 1914. West Virginia: New child labor law is cause of decrease. In Alabama, the decrease is due to better law enforcement under the new Department of Child Welfare.

The causes of increase of child labor are so varied that they cannot be summarized although high wages, high prices, and poverty are probably the chief causes. High wages: In Chicago in one school district, 70 per cent of the children received an initial wage of \$10 a week or over, this summer. The average wage for the group was \$11.65 a week, which sum was an average adult wage ten years ago. High cost of living: In Louisiana "by far the larger number give as a reason the high cost of living. A few have admitted that they were going to work because of the higher pay they could get now, and in some instances during the recent strikes children gave as a reason for applying for work that their fathers were on strike." Demand for labor is given as a cause in Wisconsin, where there was a

20 per cent increase from January to September, 1920. Lack of enforcement of law: In Texas it is reported that the compulsory school law is not enforced.

There is every indication that the closing down of industries has caused a decrease in the number of permits issued in the last two or three months of 1920. But it is evident that in the larger industrial centres the increase of permits given out in the first part of the year was so great that it has not been offset by the present decrease. In New York City the total increase for the first six months was 5283; there was a decrease of 2930 in the next three months, making the total increase over last year 2353. In Chicago there was a 10.5 per cent increase for the first six months that is far from being offset by the decrease in the next three months. On the contrary, many industries are once again opening up after having been closed for a period. Although 1920 has been a year of low adult employment, it has been a year of increased child employment, probably due to the cheaper wages at which the children may be obtained. In New York City the Vocational Guidance and Employment Service for Juniors has been organized to cope with the problems resulting from unemployment, i.e., children going to work because of poverty in their families and children already at work being thrown out of employment. In Detroit the supervisor of compulsory attendance in the schools has asked the Public Welfare Commissions to provide scholarships for 1000 children now at work, so that they may be returned to school and their places in industry taken by the adults unemployed. The following figures give some idea of the extent of child labor in big industrial centres: Chicago: 27,806 children between 14 and 16 held work permits on July 1, 1920; New York City: 41,901 children, 14 to 16 secured permits during the first nine months of 1920 against 49,291 in the whole of 1919; Connecticut: average number of children securing work permits each year is 10,000; Massachusetts: 30,000 children 14 to 16 at work (estimated) and 80,000 under 18 years; Baltimore County, Maryland: 15,903 permits issued in the first ten months of 1920; New Jersey: average number of permits issued per year, for last four years, is over 19,000. The above figures do not cover unregulated industries, of course. Agriculture and domestic service are almost never regulated; street trades are seldom included as boys receive special permits for street work wherever there is any regulation.

FOREIGN. A royal order dated February, 1919, was made governing child labor in Belgium and possessions. This provides that children under 14 years may not be employed unless they possess a school-leaving certificate, and even then not under 13 years; that the employment of children under the age of 16 or girls under 21 on work designated as unhealthy, is prohibited; that children under 16 and girls under 21 shall not be employed for more than 12 hours in any one day, and that this period shall be interrupted by periods of rest every hour and a half; and that children under 16 shall not be employed after 9 P.M. or before 5 A.M.

A decree of December 19, 1918, in Czechoslovakia prohibits employment under 14 years, and further provides that male workers up to 16 years and female up to 18 years shall only be employed on work which is not injurious to their

health. A decree of March, 1919, in Austria further controls child labor in that country. The International Labor Office of the League of Nations at Geneva, Switzerland, is making efforts to have child labor legislation introduced into a number of countries which do not now have it. Legislation in England, following the recommendations of the joint industrial conference of employers and employees, is being enacted.

Further information on the subject of child labor may be had from the U. S. Department of Labor, Children's Bureau, Washington, D. C., and from the National Child Labor Committee, 150 E. 22nd St., New York City. The latter organization had in 1920 some 14,932 members, a marked increase from 1919. It publishes *The American Child*, a quarterly journal of general child welfare.

CHILD WELFARE. See CHILD LABOR.

CHILDREN'S COURTS. See JUVENILE COURTS.

CHILE. A South American republic on the western coast, extending along the Pacific to the south from Peru. Capital, Santiago.

AREA AND POPULATION. The length of the country from the Peruvian border to the southern limit of South America is 2628 miles and the average width from the crest of the Andes to the ocean is 177 miles. There are 23 provinces and one territory with an estimated total area of 289,829 square miles. The population in 1907 was 3,249,279. The population, Jan. 1, 1918, was estimated at 3,945,538, a density of 3.61 to the square mile. The populations of some of the principal towns in 1918 were: Santiago, 415,641; Valparaiso, 212,659; Concepcion, 72,785; Iquique, 46,941; Talca, 42,563; Chillan, 39,691; Antofagasta, 66,584. The great majority of the people are of European origin, only one-fourth being of pure Spanish stock. The Indians consist of three classes: The Changos, in the north coast region; the Araucans (about 101,000) on the western slopes of the Andes and in the valleys; and the Fuegians, who are mostly nomads, in the region around Tierra del Fuego. In 1919 the primary schools numbered 3174 with 7164 teachers and about 300,000 pupils.

TACNA AND ARICA. These two provinces have for many years been subject of dispute between Chile and Peru. They have been occupied by Chile since the treaty of 1884, but their possession was to be settled by popular vote in 1894. For various reasons this was not disposed of and the question was still unsettled in 1920. It was one of the points that required adjustment by the League of Nations, but its discussion was deferred when the subject came before the Geneva Assembly in December. The questions at issue and the arguments of the respective disputants will be found in the YEAR BOOK for 1918 under the title PERU. The region is shown on maps of Chile as the northernmost province of that country and on maps of Peru as the southernmost province of Peru. It comprises an upland tract rich in nitrate, but much of the land is infertile. In the eastern part there are valuable deposits of silver, copper, tin and other minerals. Railways connect points in the interior with the coast. Latterly the harbor of Arica has been improved and the nitrate industry has developed considerably.

PRODUCTION. The agricultural region is in the centre of the country and comprises about

42,184,000 acres, the number of farms in 1918 being nearly 100,000. The leading crops in respect to acreage in 1917-18 were in the order of their importance, wheat, wine, beans, barley, potatoes, oats, and corn. Their product in 1917-18 was as follows: Wine, 45,448,392 gallons; wheat, 12,584,606 cwt.; barley, 1,438,624 cwt.; beans, 1,386,288 cwt.; oats, 922,176 cwt.; corn, 734,472 cwt.; peas, 291,656 cwt.; potatoes, 236,122 tons. The livestock, Jan. 1, 1919, were as follows: Cattle, 2,225,323; sheep, 4,434,115; goats, 451,941; horses, 411,477; pigs, 326,337. (See AGRICULTURE.) By far the most important mineral product commercially is sodium nitrate to which Chile owes in large measure her prosperity. It is found chiefly in the desert of Atacama which is about 500 miles long and from 2000 to 6000 feet above the level of the sea. In 1918 the product amounted to 2,859,303 metric tons and the exports to 2,919,177 metric tons; in 1919, to 36,494,173 Spanish quintals. There are rich deposits of iron and copper. Other metals obtained are gold, silver, cobalt, and manganese, and among the non-metallic minerals, coal, salt, sulphur, and guano. The following figures for mineral products were published in 1920 by the Pan-American Union: The value of the mining output of Chile during the 10 years from 1909 to 1918, expressed in Chilean gold pesos, was as follows: 1909, 261,100,000; 1910, 300,400,000; 1911, 329,800,000; in 1912, 372,700,000; in 1913, 393,500,000; 1914, 353,700,000; 1915, 297,900,000; 1916, 491,300,000; 1917, 768,700,000; and in 1918, 772,200,000.

The Pan-American Union also published the following information in regard to factories: In 1918 there were in operation in the republic 7481 factories with an aggregate capital of 635,868,547 pesos, currency. During that year the combined output represented a value of 780,496,724 pesos, the raw material used, 409,604,937 pesos, the fuel consumed 19,594,911 pesos, and the number of employees 148,684. The production in 1918 was about 60,000,000 pesos more than in 1917, and the capital invested 23,585,215 pesos more. Of the material consumed in 1918, imported material entered to the amount of 124,074,978 pesos.

COMMERCE. The following figures were published in 1920 by the Chilean Bureau of Statistics: The total foreign trade for the year 1918 was 1,235,699,482 gold pesos, the imports being 436,074,065 pesos, and the exports being 799,625,417. In 1917 the imports were 355,077,027 pesos and the exports 712,289,028, or a total of 1,067,366,055 pesos. There was therefore for the year 1918, as compared with 1917, an increase in imports of 80,997,038 pesos and in exports of 87,336,389 pesos, or a total increase in the foreign trade of 168,333,427 pesos. The balance of trade in 1918 amounted to 363,551,352 pesos. In figures of United States currency, estimating the Chilean gold peso at 36.5 cents (18d sterling), the foreign trade for the year 1918 was: Imports, \$159,167,034; exports, \$291,863,277; total, \$451,030,311. On the same basis the figures for the year 1917 were: Imports, \$129,603,115; exports, \$259,985,495; total, \$389,588,610. The imports for the year 1918, by countries of origin, were as follows:

	1918
United States	\$74,259,940
United Kingdom	29,727,640
Peru	11,588,045
Argentina	11,806,836

India	6,828,620
France	5,087,814
Spain	4,420,889
Japan	4,293,245
Mexico	2,666,328
Australia	1,348,896
Bolivia	1,326,661
Italy	1,301,898
Sweden	1,178,265
Brazil	788,610
Ecuador	603,382
Cuba	566,450
Switzerland	374,546
Netherlands	256,456
Uruguay	217,830
Norway	212,376
Guatemala	172,151
Salvador	127,339
Costa Rica	130,183
China	110,262
Denmark	81,643
Panama	67,073
Portugal	36,198
Belgium	3,601
Germany	10,768
Other countries	133,589
Total	\$159,167,034

The exports for the year 1918, by countries of destination, were as follows:

	1918
United States	\$178,483,083
United Kingdom	66,475,572
Argentina	9,618,099
Peru	6,632,168
Japan	3,018,836
Bolivia	2,905,132
France	1,548,062
Panama	1,064,704
Egypt	962,411
Brazil	892,087
Polynesia	869,485
Spain	771,462
Australia	654,212
Mexico	609,096
Sweden	607,461
Java	551,180
Cuba	500,100
Italy	474,928
Ecuador	347,690
Uruguay	312,597
Cape Colony	175,606
India	124,626
Canada	86,954
Other British possessions	883,748
Other countries	396,616
Foreign merchandise exported	13,141,060
On orders	258,802
Total	\$291,863,277

In 1919 the foreign trade was as follows: Exports, 316,977,143 pesos; imports, 401,324,195 pesos.

FINANCE. The annual statement of the Minister of Finance of Chile, as published Sept. 13, 1920, showed that the budget prepared for 1921 reached 296,225,349 paper pesos and 55,654,835 gold pesos. (The paper peso fluctuates in value, averaging 10.75 cents on Oct. 21, 1920, while the gold peso is established at 36.5 cents.) This budget was estimated as sufficient to cover all expenses and leave a surplus of 74,000 paper pesos. The finances of the year 1919 showed a deficit of 20,000,000 gold pesos and 37,000,000 paper pesos. For the year 1920 the total authorized expenses, including pending appropriations, amounted to 337,472,120 paper pesos and 68,557,458 gold pesos, whereas the estimated receipts amounted to 146,144,603 paper pesos and 111,551,167 gold pesos. Taking into consideration laws pending, the deficit for 1920 would probably amount to 89,518,842 paper pesos.

COMMUNICATIONS. The railway mileage in 1918 was 5607 which consisted of the Longitudinal Railway running from north to south over a distance of 2831 miles and the Arica to La Paz

railway (271 miles), and 2445 miles of privately owned railways. The post offices in 1918 numbered 948 and the telegraph lines had a mileage of 21,213, of which about three-fourths were owned by the government. The merchant marine in 1918 consisted of 95 steamships and 35 sailing vessels, and the vessels entered had a tonnage of 12,514,594 and those cleared had a tonnage of 12,625,686.

DEFENSE. Compulsory military service lasts from the 18th to the 45th year inclusive. At the age of 20, recruits are trained for one year and they then serve for nine years in the reserve of the active army. After that, until the end of their 45th year they are in the second reserve which serves as the second line army. The total strength of the Chilean army in 1919 was 1374 officers and 19,487 men. In December, 1918, the organization of an air force was begun under British instruction, a number of seaplanes and airplanes having been purchased from the British government. The principal vessels of the Chilean fleet are the *Capitan Prat*, a pre-dreadnought, and the *Esmeralda* and the *O'Higgins*, both of which are armored cruisers. The first-named has a displacement of 6966 and the other two of 7030 and 8500 respectively. There are besides a number of torpedo-boats, destroyers and other small craft. See NAVAL PROGRESS.

GOVERNMENT. The executive authority is vested in a president elected for five years by indirect vote and not eligible for reelection. The legislative power is vested in a congress consisting of the Senate and the Chamber of Deputies. The Senate has 37 members, elected by provinces for six years and the Chamber 118 members, elected by departments for three years. There is a state council consisting of five members nominated by the President and appointed by Congress, and there is a Cabinet or Ministry divided into the following departments: Interior; Foreign Affairs; Justice and Public Instruction; Finance; Defense; Industry; Public Works and Railways. The President in 1920 was Señor Dr. Juan Luis Sanfuentes, who assumed office, Dec. 23, 1915. On June 25, 1920, a new presidential election was held, but its results were disputed and a Court of Honor was created to decide the question in October. The Court decided that the majority of electoral votes had been given to Arturo Alessandri, the head of the Liberal and Radical coalition.

HISTORY

PRESIDENTIAL ELECTIONS. The candidate of the Liberal Alliance, Arturo Alessandri, who was nominated April 25th, at a meeting of the Radical, Democratic, and a part of the Liberal parties, secured as a result of the popular vote, 177 electors, against 174 for Luis Barros-Borja. According to law a joint session of the Congress should pass upon the election a month after its correction, but the Congress delayed its decision and a Court of Honor was constituted to review the returns. Two members of that tribunal resigned and there was doubt whether the decision of the Congress would not have to be awaited, but on October 4th, the Court of Honor rendered its decision which gave Alessandri a majority of one electoral vote. Congress accepted the decision of the Court and proclaimed Alessandri the duly elected President for the five year period beginning December 26th. The new President was a representative of the middle class and was reputed to have great popularity

among the people at large. He had been in the course of his career a representative in Congress and several times member and once chief of the cabinet. He was committed to the acceptance of a variety of reform measures, including decentralization of the administration; allowing the provinces to elect their own officers; stabilizing exchange; woman suffrage, subject to certain qualifications; a proportional tax on incomes; extension of the protection of labor. As to the long-standing dispute with Peru, he declared that his efforts would tend to put an end to the old question within the bases on which both countries signed the treaty of Ancon, carrying out the plebiscite established therein in accordance with the precedents that international law fixed for these acts. Both countries, he said, had an interest in solving the question.

MINISTERIAL PROGRAMME. The new Ministry presented its programme to Congress, December 28. It included certain proposals for the restriction of the production, importation, and sale of alcoholic beverages. The measures were so far as possible to avoid injuring the capital invested, and they looked to a more or less exclusive production of wine, instead of stronger liquors. The programme also referred to the desirability of woman suffrage, and the equality of women under law in administration, trade, and industry. Other features dealt with economic conditions including the necessity of greater production and of a higher degree of coöperation between capital and labor with a view to reducing the cost of living; a minimum wage scale; the arbitration of labor disputes; the creation of a ministry of labor and social welfare and of a ministry of agriculture; the passage of laws stabilizing the market; and the increase of the state revenue by 100,000,000 pesos to meet increasing expenses; the revision of the tariff schedules; a tax on private wealth and increased taxes on inheritances; and on imported tobaccos and liquors.

OTHER EVENTS. The Swedish Council of State approved a convention for arbitration of any future differences with Chile, providing that disputes should be submitted to the Council of the League of Nations. In November plans were announced for fortnightly sailings of the vessels of a Swedish shipping company between Sweden and Chile. An extraordinary earthquake occurred December 9th, in the course of which mountains in the Andes sank for a distance of about 160 feet. It was accompanied by the eruption of two volcanoes. There were not many casualties, owing to the fact that the region was thinly populated. It occurred in the neighborhood of the lower Franeura River, latitude 39.20, longitude, 71.41.

CHINA. Down to Feb. 12, 1912, the oldest monarchy in the world; on that date declared a republic; situated in the far east of Asia on the Pacific Ocean. Capital, Peking.

AREA AND POPULATION. China proper contains 18 provinces. The territory of the republic also includes the so-called new dominion of Sinkiang or Hsinchiang; Manchuria, Mongolia, and Tibet, but over Tibet and Inner Mongolia only a loose authority is exercised, while Outer Mongolia was recognized as self-governing in October, 1912. See the YEAR BOOK of 1917 for a summary of changes after 1897. The estimates of population vary all the way from the neigh-

borhood of 300,000,000 to over 430,000,000. The former American Minister at Peking estimated the total population, exclusive of Tibet and Mongolia at 325,000,000. The Chinese Maritime Customs estimates it at the high figure of 439,405,000, including Mongolia and Tibet, but excluding Manchuria which was placed at 19,290,000. The area including all the divisions above named was estimated at 3,913,560 square miles. No later figures by provinces and other divisions are available than those published in preceding YEAR BOOKS which are repeated here for convenience. They date back to Feb. 27, 1911.

The 18 provinces of China Proper	Area: English sq. miles	Population (estimated)	Capital (Seat of Tutukh)
Chili	115,800	22,970,000	Tientsin
Shantung	55,970	25,810,000	Ch'i-nan
Shansi	81,880	9,420,000	T'ai-yuan
Honan	67,940	22,875,000	K'ai-feng
Kiangsu	38,600	15,380,000	Nanking
Anhui	54,810	14,075,000	Anch'ing
Kiangsi	69,480	16,255,000	Nanch'ang
Chékiang	36,670	13,950,000	Hangchow
Fukien	46,320	8,560,000	Foochow
Hupei	71,410	21,260,000	Wuchang
Hunan	83,880	20,580,000	Ch'angsha
Shensi	75,270	6,725,000	Hsian
Kansu	125,450	3,810,000	Lanchow
Szechwan	218,480	54,500,000	Ch'engtu
Kwangtung	99,970	23,700,000	Canton
Kwangsi	77,300	5,425,000	Kuei-lin
Kweichow	67,160	9,265,000	Kuei-yang
Yunnan	146,680	8,053,000	Yunnan
Total	1,532,420	302,110,000	
New Dominion: Hsinchiang	550,340	2,000,000	Tihuaifu (Urumchi)
Dependencies: Manchuria	863,610	.....
Fengtien .....	.....	5,830,000	Mukden
Kirin .....	.....	5,350,000	Kirin
Heilungchiang .....	.....	1,560,000	Taishihar
		12,740,000	
Mongolia	1,367,600	1,800,000	Urga *
Tibet	468,200	2,000,000	Lhasa †
Grand total	3,913,560	320,650,000	

* The seat of the Bogdo Khan. † The seat of the Dalai Lama.

Peking, the capital, has an estimated population of over 1,000,000. The principal ports with their populations estimated for 1918 are as follows:

Aigun	18,546	Soochow	500,000
Sansing	15,465	Hangchow	684,137
Harbin	28,600	Ninpo	670,000
Antung	51,834	Wenchow	212,699
Dairen	54,715	Santiao	8,000
Newchwang	58,061	Foochow	624,000
Chinwangtao	5,000	Amoy	114,000
Tientsin	800,000	Swatow	85,000
Chefoo	54,450	Canton	900,000
Tsingtau	50,175	Kongmoon	70,000
Chungking	437,600	Samshui	8,000
Wanhien	70,000	Kiungchow	58,527
Changsha	535,800	Pakhoi	20,000
Ichang	55,000	Wuchow	40,000
Shasi	105,000	Nanning	50,000
Hankow	1,443,950	Lungchow	13,000
Kiukiang	36,000	Mengtsz	10,000
Wuhu	99,584	Szema	15,000
Nanking	376,291	Tengyueh	10,000
Chinkiang	168,309	Shanghai	1,000,000

The following information concerning the foreign population of China was supplied by the Bureau of Foreign and Domestic Commerce in December, 1920. The following table indicates, by nationalities, the foreign population and business firms resident in China in 1913, 1918, and 1919:

Nationality	1913	Persons		1913	Firms	
		1918	1919		1918	1919
American	5,340	5,766	6,660	131	234	314
Austrian	419	271	27	22	16	5
Belgian	178	360	391	18	20	20
Brazilian		16			1	
British	8,966	7,958	13,234	590	606	644
Danish	854	475	546	14	23	27
Dutch	161	377	367	10	24	25
French	2,292	2,580	4,409	106	156	171
German	2,949	2,651	1,835	296	75	2
Hungarian	21	7	11	2		
Italian	855	535	276	39	36	19
Japanese	80,219	159,950	171,485	1,269	4,483	4,878
Norwegian	249	279	249	7	11	12
Portuguese	3,486	2,417	2,390	46	43	93
Russian	56,765	59,719	148,170	1,229	1,154	1,760
Spanish	136	298	272	22	9	8
Swedish	292	530	632	6	36	4
Nontreaty powers	1,645	343	537	6	36	33
Total	163,827	244,527	350,991	3,805	6,930	8,015

The figures for the American population are defective owing to the omission of American residents to register at the various consulates. These had increased much more than the figures indicate. The British population increased from 8966 in 1913 to 13,234 in 1919, and this undoubtedly was a true reflection of the actual British residents in China. The increase in the Japanese and Russian population was expected and was not thought to be overestimated.

The increase in American firms from 131 to 314 was more nearly correct than the statistics in regard to the population. See ANTHROPOLOGY.

RELIGION AND EDUCATION. Ancestor worship prevails throughout. There are three forms of native religion: Confucianism, Taoism, and Buddhism. Mohammedans are found in all the provinces and are the most numerous in Kansu, Sinkiang, Chili, and Yunnan. Their number was estimated in 1909 at from 5,000,000 to 10,000,000. The majority of the people are Buddhists. At the end of 1916 the Roman Catholic natives numbered 1,790,220; Protestants, 511,142; Orthodox Greek, at the end of 1915, 5587. Under the new republic provision was made for compulsory primary education, and for the establishment of various technical colleges and higher normal schools. These measures were in 1920 partially executed, but had been arrested by the disturbed conditions of the country and by financial difficulties. The schools of all kinds in China were estimated in 1916 at 129,739 with 4,294,251 pupils.

PRODUCTION. The interests of the country are chiefly agricultural and the holdings are for the most part small. Cultivation is in a backward state and primitive tools are used. The method is rather intensive than extensive. The leading crops are wheat, barley, corn, millet, and other cereals; peas and beans, rice, sugar, indigo, cotton, tea, and silk. Of the live stock, pigs are raised in especially large numbers and are an important export. There is an abundant growth and great variety of fruit trees, and the raising of vegetables has been carried to a high degree of perfection. The chief area of cotton production is the Yangtse Valley. Tea is cultivated in the West and South. The soya bean is the chief product of Manchuria. One of the most successful industries is the culture of silk, China supplying about 25 per cent of the world's stock of raw silk. In 1918 an international committee was established for the promotion of silk culture with a promise of government aid and since that time the scientific study of the subject has been carried on in schools opened for the purpose. A number of cotton, wool, flour, and rice mills have

latterly been established. As to mineral resources, China is considered one of the chief coal countries of the world, the coal area being placed at 133,513 with an average annual production estimated at 15,000,000 tons. Iron also is abundant, the average annual production being about 468,638 tons and the Taysh deposits being classed among the richest in the world. Petroleum is worked on the Upper Yangtse and in the Province of Chensi. The copper resources of Yunnan are reputed to be among the richest in the world. Tin is mined extensively and is an important export. Other mineral products exported which are of considerable quantity are gold, silver, and lead. See AGRICULTURAL EXPERIMENT STATIONS.

COMMERCE. The following commercial statistics were supplied by the United States Bureau of Foreign and Domestic Commerce on the basis of returns from the Chinese Maritime Customs. They are given in Haikwan taels, which in United States money were as follows for the years to which the figures apply: 1913, \$7415; 1918, \$1,193; and for 1919, \$1,359. The following total shows the gross value of the foreign trade for 1913, 1918, and 1919.

Year	Imports Haikwan taels	Exports Haikwan taels	Total Haikwan taels
1913	586,290,431	419,483,420	1,005,773,851
1918	577,643,803	508,633,752	1,086,277,555
1919	679,529,544	663,341,274	1,342,870,818

It is to be noted that the trade of 1913 exceeded that of any previous year. The year 1919 was a prosperous one. Conditions in the Northern China provinces were generally good, and the crops were excellent. The contribution to the export trade from that region was exceptionally large. The Northern Manchurian ports showed a revival of trade in the beginning of the year, but it was checked by the lack of proper means of transport and other reasons. The principal sharers in the trade during the three years above mentioned were Japan, Hongkong, the United States, and the United Kingdom. The percentages were as follows: Japan, 1913, 20 per cent; 1918, 40 per cent; 1919, 37 per cent. Hongkong, 1913, 29 per cent; 1918, 26 per cent; 1919, 22 per cent. The United States, 1913, 7 per cent; 1918, 13 per cent; 1919, 17 per cent. The United Kingdom, 1913, 12 per cent; 1918, 7 per cent; 1919, 10 per cent. The table on page 145 shows the values by countries for those three years.

As will be noted therefrom, Germany and certain other European countries prominent in the trade of China in 1913 had disappeared from the returns for 1918 but reappeared in those for

Countries	Imports			Exports		
	1913	1918	1919	1913	1918	1919
Austria-Hungary . . .	\$8,015,604	.....	.....	\$1,149,455	.....	\$1,402,129
Belgium	11,716,396	.....	\$1,701,937	4,854,154	.....	5,418,621
British India	35,619,816	\$9,132,793	86,321,732	4,590,118	\$7,203,205	13,045,602
Canada	1,378,339	12,326,473	25,649,447	483,732	4,897,999	5,882,023
Dutch East Indies . .	4,684,330	9,967,600	9,115,413	1,931,658	3,092,263	4,175,360
France	3,878,519	1,783,199	4,858,567	30,215,968	36,350,324	46,594,659
French Indo-China . .	3,470,863	3,177,809	3,772,731	1,399,265	1,901,050	2,427,430
Germany	20,865,789	.....	404	12,624,204	.....	222,693
Hongkong	121,241,377	188,216,499	204,765,770	86,850,962	139,566,709	178,702,107
Italy	468,688	335,898	1,340,698	6,167,825	11,494,292	6,991,093
Japan, incl. Chosen . .	88,932,142	286,444,910	337,328,613	53,652,830	211,255,835	295,750,976
Marao	4,886,355	5,089,465	6,861,803	3,672,188	5,401,565	6,406,605
Netherlands	1,044,289	1,324	121,097	6,445,463	41	2,389,903
Philippines	3,644,444	219,649	3,327,370	565,500	2,568,800	2,704,755
Russia	14,232,044	.....	2,279,815	33,309,246	17,421,771	28,975,957
Singapore Straits, etc.	6,463,446	12,044,367	13,355,707	5,400,334	7,635,823	15,249,056
United Kingdom . . .	71,622,825	58,929,147	86,219,487	12,120,865	30,140,655	77,716,102
United States	26,106,898	68,875,510	146,896,995	27,917,698	92,027,108	137,420,282
All other countries . .	2,138,011	1,855,360	3,816,574	5,499,673	8,707,016	25,741,801
Total	\$422,775,535	\$661,987,447	\$879,269,848	\$299,051,063	\$579,658,456	\$857,269,990

1919. The net value of Chinese trade with foreign countries in 1919 exceeded that of 1918 by \$494,893,935 and that of 1913 by \$1,014,713,240. Exports practically balanced imports for the first time. The most important group of items in the imports was cotton textiles which came to \$285,009,632 as compared with \$180,595,845 in 1918. There was not, however, a corresponding increase in quantity on account of the high prices. The total value of the metal imports in 1919 was \$76,931,631, a great increase over 1913, and there was a corresponding increase in quantity. The imports of machinery in 1919 greatly increased over those of any previous year. Silk is the chief item in the export trade and the largest sharer among the countries of destination has been France. In 1919, however, Japan received 10,226,134 pounds, Hongkong 10,550,799 pounds, and France 9,721,733 pounds. Next in numerical order was the United States which received 8,285,868 pounds. Between 1913 and 1919 there was an enormous increase in the export trade in beans in spite of the large consumption in China, where one of the chief industries is the manufacture of bean-cake and bean-oil. The only important export that had fallen off from the pre-war level was tea. The leading countries of destination for the exports of tea are Great Britain, and the United States. Next to these comes Japan. Exports other than those mentioned that shared a large development in 1919 were eggs, the egg industry having developed more than almost any other during the war period; wood-oil; wheat and flour; and meats, on which an especially heavy demand was made by the Allied countries during the war. The chief metal exports were antimony, pig-iron, iron ore, and tin, the exports of antimony during the war being especially heavy.

RAILWAYS. The report on the government railways issued by the Ministry of Communication of the Republic of China for the calendar year 1918 stated that of 6836 miles of railway in China in that year, over 4000 miles of main and branch lines were owned and operated by the government, these comprising 14 railways in 14 out of the 18 provinces. In addition there were 11 provincial and private railways (some owned by mining companies) aggregating 425 miles and five concession lines aggregating nearly 2300 miles.

The need of additional construction in China was shown by the fact that taking the 18 provinces as a whole, there were in 1918 about 460 square miles of territory and 107,000 population per mile of railway. These figures might be

compared with 40 square miles and 8000 population for India, and 12 square miles and 3800 population for the United States, but owing to the extensive systems of waterways in China which serve the people so generally these average figures always will be higher there than in other countries.

The report also states that the construction cost for the government lines had averaged \$126,000 per mile, ranging from \$80,000 to \$145,000. There were only 13 miles of double track, but sidings and industrial lines raised the trackage to a total of nearly 4300 miles. The equipment included 653 locomotives. Chinese railway equipment must be purchased abroad, therefore it is the policy to extend the life of the engines as long as possible by means of extensive repairs and renewals, rather than to purchase new ones. Operating expenses were 44 per cent of operating revenues. The traffic consisted of 25,475,379 passengers and 18,551,684 tons of freight.

In addition to the complications of international financial, industrial, and political conditions, the famine of 1920 had its effect on the railway situation inasmuch as it seemed likely to reduce earnings and some \$300,000,000 of Chinese Government Railway bonds were held abroad. In 1918 gross operating revenues of the Chinese government railways amounted to \$77,650,000. When revenues derived from government service, and similar items are subtracted, the actual commercial revenue was about \$70,000,000. Of this \$25,000,000 was passenger revenue and \$40,000,000 freight revenue, leaving \$5,000,000 to come from several miscellaneous sources. Out of this \$40,000,000 of freight revenue nearly \$20,000,000 came from agricultural and animal products. Naturally with famine there would be a decrease in passenger revenue and in revenue from agricultural products and with such shrinkage of revenue would go inability to meet interest charges. The traffic in agricultural products on lines like the Peking-Mukden and the Shanghai-Nanking, which run from regions of plenty to regions of want, was heavy, for there was a considerable purchasing power in these districts. While traffic for 1920 held up reasonably well the prospects for the following year were not favorable.

It was realized that new railway construction would in a large measure alleviate the situation, and the Ministry of Communication authorized the building of two short railways, as a beginning. One of these, the line from Shih-chia-chuang to Tsangchow, would connect the Province of Shansi with Tientsin more directly, and

pass through one of the worst famine districts. Another line proposed was from Cheefoo to a connection on the Shantung line, probably at Weihai. Work was to be pushed on the extension of the line under construction toward Suiyuan on the Mongolian border. It was hoped that funds would be available from the Dutch-Belgian loan for the continuance of work on the Lung-Hai line, for this also traverses a famine district. The Siema-Carey Grand Canal project and several other railway contracts quiescent for some years, which ought to be awakened to activity in this emergency, if prosecuted would serve materially to relieve the situation and not only afford return but would keep alive a large rural population in North China.

On the technical side of railway operation and maintenance a number of important innovations were considered during the year. An important change in railway methods in China was announced to begin Jan. 1, 1921, when the railways would assume full responsibility for shipments. Previously, except on the Shanghai-Nanking line, all shipments had been at owner's risk, necessitating sending along a watchman with every consignment, or the use of a forwarding company as an agent. Through billing of goods was to begin on the same date, auditing of invoices to be made in the clearing house located in the Ministry of Communications.

The engineering conference assembled to consider and prepare standard specifications for steel in rails and the tensile strength of bridge materials failed to arrive at satisfactory results on account of the diversity of characteristics in the products of the various manufacturing nations represented in the Chinese railway system. The result was that it would remain with the Ministry to decide upon its own specifications.

SHIPPING. During 1918, 193,567 vessels of 80,247,706 tons entered and cleared Chinese ports. Of these, 3119 were American; 31,034 British; 365 French; 464 Italian; 24,961 Japanese; 1949 Russian; and 130,802 Chinese. In the direct foreign trade the vessels entered had a tonnage of 9,549,571, and cleared of 9,396,183, the leading nationalities being in order of numerical importance, the Japanese, British, and Chinese.

DEFENSE. Provision for a form of conscription came into force Jan. 1, 1916. This provided nominally for about 250,000 men but the actual number did not exceed 180,000. In the disorganized state of the administration, the military governors became virtually independent of the central authority and recruited an army according to their own desires. No means of determining the number exactly were available but the total was placed as high as 1,200,000 in 1919. The largest vessel at the beginning of 1920 had only a displacement of 4300 tons. There were besides this three cruisers of 3000 tons each and two of about 2600 tons. There were also a number of gunboats, torpedo boats and other small craft.

GOVERNMENT. The executive authority is vested in a president and vice-president, and the legislative in two houses, the Senate with 264 members and the House of Representatives with 596. After the setting up of the republic, Yuan Shih-kai was elected first president, Oct. 6, 1913. He died June 6, 1916, and was succeeded in the presidency by Li Yuan-hung. On Oct. 10, 1918, Hsu Shih-Chang was inaugurated. In the meanwhile, owing to the usurpation of the local governors, the central government lost all real au-

thority and for some years past a condition of civil war has prevailed. The governors had not acknowledged the Peking government and in the South a separate administration was set up under Dr. Sun Yat-sen. The cabinet appointed January, 1919, was reorganized in July, 1919, and at the beginning of 1920 was constituted as follows: Premier, Chin Yun-Peng; Minister of the Interior, T'ien Wen-Lieh; Minister of Foreign Affairs, Lou Tseng-Tsiang; Minister for War, Chin Yun-Peng; Minister of the Navy, Sa Chen Ping; Minister of Finance, Li Ssu Hao; Minister of Education, Fu Yu-Fen; Minister of Justice, Chu Shen; Minister of Communications, Tseng Yu-Chun; and Minister of Agriculture and Commerce, T'ien Wen-Lieh.

HISTORY

THE GOVERNMENT'S DIFFICULTIES. After sharp conflict between the different groups a new cabinet was formed under the former acting-president, General Chin Yun-Peng, who also held the portfolio of war. It at once encountered the opposition of the Conservatives who demanded negotiation with Japan and the Foreign Minister resigned February 19th in consequence. At the end of February the Prime Minister resigned for the same reason, but afterwards reached a compromise on the subject and retained office. He resigned finally, however, early in May and was succeeded by Admiral Sa Cheng-Ping.

A party known as the Anfu which was accused of being pro-Japanese and seemed to be under Japanese protection revolted against the government in the North, but was defeated in July. The government ordered the troops disbanded, but instead of that, they were incorporated in the armies of rival military governors and the central government was powerless to enforce its decision. Meanwhile, the ministry was pursuing a policy of reconciliation with the independent government in the South. The financial difficulties of the central government were extremely serious at the very time when the famine was threatening the lives of some 20,000,000 people in the provinces of Chili, Shantung, and Honan. In September after the Peking government showed a desire to come to terms with the government of the South, the Sun Yat-sen was involved in difficulties with revolutionists in its own territory. Dr. Sun Yat-sen, president of the southern republic, declared that the condition of China was worse than it had ever been before, Northern China being completely at the mercy of pro-Japanese reactionaries and a military government backed by an army of 300,000 men having practically become the master of the situation. He went on to say that the only salvation for China was a revolution that would drive out the reactionaries. No improvement in the situation had taken place at the close of the year. There was still a revolutionary government in Canton and another under Sun Yat-sen which persisted in its plan to overthrow the central government which it stigmatized as pro-Japanese. The militarist party still seemed to be in control. The plan for a new constitution was apparently abandoned. Although the pro-Japanese or Anfu had been defeated in July there was still some danger from that quarter, and the Japanese were accused of harboring the fugitive leaders.

On November 6th the Prime Minister, granting for the first time an interview to the journalists, announced that a commission would be ap-

pointed for the settlement of the difficulties between the North and South; that a truly representative Parliament would be elected; a constitution drafted; the civil and military administrations separated; and the reduction of the armies continued. He also declared that the whole financial system would be reorganized.

RELATIONS WITH FOREIGN POWERS. The consortium of foreign bankers to coöperate in financing China which was begun in 1919 completed its arrangements early in the year. The loan of each group required the approval of the foreign department of its government. Japan retained the right to object to any loans that seemed to her to endanger her national existence or to affect her sovereign power. A meeting for the purpose of organizing the loan was held in New York, October 11, by the delegates of the interested Powers, namely the United States, France, Great Britain, and Japan. It completed its work, October 15, the delegates disclaiming any intention of obtaining a hold upon the territories of China. In October the Chinese government deprived the Russian legation and consulates of their official status—the latter being representatives of the old Kerensky party. This action was disapproved in the United States and the American State Department approached the governments of other Powers with a view to taking action against the measure, which was thought to be the result of Bolshevik propaganda. The Chinese minister to the United States, Dr. Wellington Koo, declared that there was no basis for this belief. In answer to questions through the American minister, the Chinese government declared that it would protect Russian interests and had no intention of cancelling Russian concessions. On this subject the former American minister to China, Dr. P. S. Reinsch, declared that British, American and French advisers had counseled China to suspend the payment of the Boxer indemnity to Russia and withdraw recognition of Russian diplomatic representatives in China. It was urged that the Russian officials in China had long ago ceased to represent any government. Another question that aroused in the United States some fear in regard to the influence of Bolsheviks in China was the negotiation undertaken for the resumption of trade with Siberia. In 1920, the Chinese government sent a commission of inquiry to Siberia and Manchuria to investigate conditions on the Chinese Eastern Railway, and it made its report in October. According to this, the Japanese had instigated attacks on the railway by bandits for the purpose of destroying Chinese authority and had done all that they could to interfere with the policing of the road. The ill-feeling toward Japan (see preceding YEAR BOOK, article CHINA) continued throughout the year.

FAMINE CONDITIONS. At a meeting of representatives of the various relief societies at Peking, December 10, the economic condition of the country was reviewed. It was said that there was danger that at least 15,000,000 people would die of starvation in the course of the coming winter. The government was largely blamed for this state of affairs. It was accused of being absorbed in political projects and paying no attention to the needs of the country, which therefore had to be supplied by outside aid. It was said that the administration was exceedingly corrupt, but that the financial difficulties were chiefly due to the militarist policy which sacri-

ficed everything to the maintenance of a huge army estimated at that time at 1,270,000 men. For keeping up this great force more than three quarters of the annual revenue were required and according to some of the critics the cost exceeded the entire revenue. One of the chief difficulties of the situation was the dishonesty of the minor officials which prevented the relief funds from reaching their proper destinations. The situation was complicated by the existence of the rival republic in the South. At that time the chances seemed to be in favor of General Chang Tso-lin in the approaching elections, but in the event of his success, the difficulty would probably be increased as adding to the power of the military party.

The press at the close of the year abounded in items concerning the scarcity in China which was said to be threatening famine in a region inhabited by a population of 87,000,000, that is to say, five entire provinces in Northern China. It was said that a season of extreme drought had left vast areas without food and that families were committing suicide rather than face certain starvation, and selling or drowning their children, and that everywhere might be seen bands of starving people roaming the country in search of food. President Wilson on December 8th appointed a national commission to investigate the subject, with Mr. Thomas W. Lamont as chairman. At the close of the year it was said that there was a probability that 15,000,000 people would starve to death before the winter was over.

CHOSEN. SEE KOREA.

CHRISTIAN ENDEAVOR, UNITED SOCIETY OF. This inter-denominational society of young people was founded in 1881 for the purpose of training young converts for church membership and church work. Statistics for 1920 show 73,681 societies, of which 46,910 were in the United States, 4079 in Canada, and 22,599 in foreign countries, besides 65 floating societies, and 28 army societies. In 1920 there were enrolled 185,857 Comrades of the Quiet Hour, or young people who give a definite time to prayer and meditation every day, and 56,046 members of the Tenth Legion, or young people who give one-tenth of their income to religious work. There were also enrolled in 1920, 5590 Life-Work Recruits, or young persons who are ready to give themselves to full-time Christian service, and 27,889 Christian Endeavor Experts, who have passed an examination in Christian Endeavor principles and methods.

The programme for 1920-21 consists of five points: (1) A 50 per cent gain in membership; (2) the organization of a society in every church in the country; (3) a definite goal in every State for denominational missionary gifts; (4) a field-secretary for at least part time in every State and province; and (5) an alumni Fellowship in every union. Besides these, four other goals have been added in a Loyalty Campaign: (A) An increase of 600,000 new members in the societies; (B) the enrollment of 600,000 Endeavorers for systematic Bible study, the study of missions, church history, stewardship, personal evangelism, social service, or Expert Endeavor; (C) 600,000 vacant seats filled at church services; and (D) 600,000 young people urged to accept Christ and unite with the church.

Reports from foreign countries show steady progress and even in areas devastated by the war the movement has not suffered extinction.

In Germany, before the war, there were 500 societies. By the end of 1920 there were nearly 1000 societies. In Budapest, Hungary, the union has for years conducted a large hospital. Finnish secretaries have carried the message in 1920 to Esthonia, where a great revival broke out, and other Balkan provinces, and large societies have been formed there. In Poland also the societies are flourishing. Mexico has reestablished the union of societies and has held a successful convention, and leaders in Brazil are planning an All-South American convention in 1922. In the United States more than 20 field-secretaries are now employed by the various State unions. A great world's convention is planned for New York City July 6-11, 1921, the chairman of the convention committee being Hon. Frederick A. Wallis, commissioner of immigration at the port of New York. In 1920 there were 190 Alumni Fellowships with a membership of nearly 11,000, whose annual contributions make possible the financing of Christian Endeavor both at home and abroad.

In 1920 the officers were: President, Rev. Francis E. Clark, D.D., LL.D.; Associate President, Rev. Daniel A. Poling, LL.D.; General Secretary, Edward P. Gates; Treasurer, Alvin J. Shartle; Editorial Secretary, Rev. Robert P. Anderson. Headquarters are maintained at 41 Mt. Vernon Street, Boston, Mass.

CHRISTIANS. The last quadrennial convention of this denomination was held in 1919, to which the following statistics were reported: 105,310 communicants, 1204 churches, 957 ministers, and 963 Sunday Schools with 76,055 pupils. National headquarters of the denomination are at The Christian Publishing Association, Dayton, Ohio. During 1920 the Midwest Christian Convention, including the states of Ohio, Indiana, Michigan, Illinois, Pennsylvania, Wisconsin, and Kentucky has been organized. This places the entire church in five territorial conventions: New England, Southern, Metropolitan, Midwestern, and Western Conventions. Each State has its State association and the territory within each State has its several district conferences.

The Forward Movement of the church has occupied its attention in a five point programme during the year. The financial goal has been \$5,000,000. In the Southern Christian Convention the per capita quota has been \$70 per member. A Christian Temple is being erected at Winona Lake, Indiana, to accommodate the general meetings of the denomination at this religious centre. During the year the Commission on Christian Unity has sent communications appealing to the other denominations of the country in the interest of the union. A system of summer schools has been arranged for the season of 1921 to avoid conflict and rotate a part of the same faculty for all. These will be held at Craigville, Mass.; Virginia Beach, Va.; Defiance, Ohio; Winona Lake, Ind.; Merom, Ill.; and Albany, Mo. The Educational Board has inaugurated a system of scholarships for ministerial students. In conjunction with the Home Mission Board and the Forward Movement Committee a special drive is being made to secure candidates for the ministry. A plan is being put into operation for the installation of Field Secretaries to cover all of the territory of the church. These will be especially trained for their work and periodic conferences held for the development of their efficiency. The regular Home Mission con-

tributions of the church exceeded all former annual records by 18 per cent. By the addition of the Forward Movement receipts for this department the increase was 150 per cent. Special demonstration specialized work has been inaugurated at the University of Illinois, Americanization at Haverhill, Mass., and in the lumbering camps of the Pacific Coast. The church sent out the largest number of new foreign missionaries in its history during the past year. They were sent to Japan and Porto Rico. A Council of College Presidents is being formed to plan a programme for their mutual work and unify their tasks. The first session will be held at Palmer College, Albany, Mo., this spring and annually thereafter. The group is at present in a drive for \$1,000,000 for endowment. Franklinton Christian College, a school for the negroes, has been under the management and faculty of white people until this year. The Afro-Christian Convention has now assumed the responsibility for the institution and members of their own race constitute the faculty. After the first half-year the change promises a great improvement. The Women's Missionary organizations of the church have been active and successful above all former efforts. No department of the church has created a greater volume of propagandic literature. They have assumed entire responsibility for points in both the Home and Foreign Mission fields.

The official organ of the denomination is the *Herald of Gospel Liberty*, while the *Christian Missionary* is the official organ of the Department of Missions.

CHRISTIAN SCIENCE. The annual meeting of the Mother Church of this denomination was held in Boston, Mass., in June, 1920. There were gathered there more than 5000 persons from all parts of the world. All reports showed considerable progress during the year. The delegates, with much enthusiasm, reaffirmed their loyalty to the Manual and the Board of Directors. The directors are Adam H. Dickey, James A. Neal, Edward A. Merritt, William R. Rathvon, and Mrs. Annie M. Knott. John W. Doorly, the retiring president, announced the officers for the following year: President, Willard P. Emery, of Detroit, Mich.; treasurer, Edward L. Ripley; clerk, Charles E. Jarvis; first reader, John Randall Dunn of St. Louis, and second reader, Miss Margaret Glen of New York City. Progress was reported in Stockholm, Geneva, Amsterdam, and Copenhagen. Growth of the movement was also announced in Australia, England, Holland, Sweden, Norway, and Italy. The German government, in 1919, had forbidden the Christian Scientists to hold public services, and a report from the church in Dresden, Saxony, said that since the overthrow of the old régime, services had been renewed with marked evidences of interest. President Emery in his opening address said, "Never has there been a time so rich in opportunity for the Christian Scientist to show the world that he has a practical, livable, useful, true understanding of divine principle to apply to his everyday affairs. We must all share in the establishment of right and peace." The report of the clerk showed that during the year 2373 lectures on Christian Science were delivered by the members of the Board of Lectureship to an approximate aggregate of 1,891,958 persons in 21 countries besides the United States. War relief work is being carried on in France, Swit-

zerland, and Italy by local churches, and general relief work in Germany to help in feeding the population. On Oct. 1, 1919, the Christian Science Benevolent Association opened a sanatorium in Brookline, Mass., for purposes of healing the sick. During the year ending May 31, 1920, the trustees under the will of Mary Baker Eddy expended "for the purpose of more effectually promoting and extending the religion of Christian Science," the sum of \$351,953.75. This money was used to assist needy churches and societies throughout the country. The treasurer's report for the year ending May 31, 1920, showed total receipts of \$438,336.87 and total expenditures of \$583,382.47. Total receipts for the real estate fund were \$72,812.83, and total disbursements were \$70,448.87. The sum of \$521,886.40 was received for the construction and maintenance of the sanatorium. Reports from various churches and societies in this country and abroad were read during the course of the meeting. The First Church in London reports that "a striking feature of the past year has been the large and overflowing congregations which have attended the Sunday morning and Wednesday evening meetings." Very favorable reports were also read from other Christian Science churches in London, Durban, Natal, South Africa, Melbourne, Australia, Hull, Yorkshire, England, Berlin and Dresden, Germany. The report on publications shows that no important works have been published during the year, although many pamphlets, booklets, and reprints were issued.

The Christian Science Publishing Society in Boston publishes the *Christian Science Sentinel*, *Christian Science Journal*, *Christian Science Quarterly*, and the *Christian Science Monitor*, besides 67 pamphlets on various phases of Christian Science.

CHRISTMAS ISLAND. An island in the Indian Ocean, 200 miles southwest of Java, known for its extensive deposits of phosphate of lime; area about 43 square miles; population in 1918, 2181. The inhabitants are mostly engaged in the phosphate industry which is the sole source of the island's wealth. In 1918 the exports for phosphate amounted to 53,370 tons as compared with 89,889 tons in 1917. Tonnage entered and cleared in 1918, 71,926. There is a railway on the island. Politically, Christmas Island has been incorporated with the settlement of Singapore since 1900.

CHURCHES OF CHRIST IN AMERICA, FEDERAL COUNCIL OF. See FEDERAL COUNCIL OF CHURCHES OF CHRIST IN AMERICA.

CHURCHILL, WILLIAM. Editor, anthropologist and philologist, died at Washington, D. C., June 9. He was born at Brooklyn, N. Y., Oct. 5, 1859, graduated at Yale College, 1882, and then passed several years in the Southern Seas where he was consul-general at Samoa and Tonga. From 1902 to 1915 he was an editor on the staff of the *New York Sun*. He was a prominent member of the National Geographic Society and of other learned bodies and the editor of the Malayo-Polynesian department of the *Standard Dictionary* in 1912. His writings include elaborate works on the study of Polynesian languages and many articles for the learned periodicals on anthropological and philological subjects.

CHURCH OF ENGLAND. See ENGLAND, CHURCH OF.

CHURCH OF GOD. See ADVENTISTS.

CHURCH OF THE NEW JERUSALEM. See NEW JERUSALEM, CHURCH OF.

CIGARS AND CIGARETTES. See TOBACCO.

CILLEY, JONATHAN PRINCE. Soldier, died April 7. He was born at Thomaston, Md., Dec. 29, 1835; graduated at Bowdoin College in 1858, and was admitted to the bar in 1860. He entered the Civil War as captain of Maine infantry in 1861 and served to the close of the war, having distinguished himself for gallant services. After the war he resumed the practice of law and was a member of the Maine House of Representatives, in 1869. In 1894 he was editor of the *Maine Bugle*.

CINCINNATI MAY FESTIVAL, See MUSIC, *Festivals*.

CINCINNATI, UNIVERSITY OF. A co-educational municipal institution at Cincinnati, Ohio, founded in 1871. In the summer session of 1920, there were 749 students and in the autumn regular session there were enrolled 3686 students, of whom 861 were in the Liberal Arts, 945 in the Engineering College, and 134 in the Graduate School. Besides the departments above mentioned, there are a teacher's college, law school, medical college, school of nursing and health, and academic and commercial evening courses. The members of the faculty numbered 370 and 12 were added in the course of the year. The income from productive funds was \$116,118 and the total income throughout the year was \$702,016. The library contained 150,100 volumes and 79,000 pamphlets. The gifts of the year included endowments from the Carnegie Corporation, the Rockefeller Foundation, and from Mrs. Mary M. Emery, Mrs. C. R. Holmes, Mrs. Henrietta Fleischman, Mr. and Mrs. Charles P. Taft, and a gift from general public subscription. President, Frederick Charles Hicks.

CITY GOVERNMENT. See MUNICIPAL GOVERNMENT.

CITY-MANAGER PLAN. See MUNICIPAL GOVERNMENT.

CITY PLANNING. The number of cities engaged in city planning continues to increase as well as the scope and thoroughness of the work. For tangible results in the city planning field, zoning was far in the lead during the first year, both as regards studies undertaken and schemes either adopted or made ready for final action. The greater progress in zoning than in other matters affecting the city plan is largely due both to the growing realization of the fundamental character of zoning as affecting almost all other phases of city planning, and to the fact that putting zoning plans into effect causes no direct drain upon the city treasury, while large expenditures are required for street widening, opening new streets, enlarging electric and steam railway facilities, establishing parks, civic centres and the like. Zoning is a sort of self-denying ordinance, or the adoption of a series of regulations essential to the establishment and orderly development of a city plan. By restricting certain portions of the city to residences of different classes, others to business, and still others to manufacturing, by prescribing the height to which buildings may be carried in different parts of the city, by limiting the percentage of the area of lots which may be built upon—or in other words, by the establishing of use, height, and area districts—the needs of various parts of cities in the way of street widths, character of

surfaces, and various public utilities may be intelligently planned to meet requirements years hence.

CITY PLANNING COMMISSIONS. Provision for comprehensive city planning was so universally neglected until within the past 10 to 20 years that when it began to be taken up the creation of an entirely new branch of city government seemed to be the only possible thing to do. City planning naturally falls in the engineering department of the city so far as the design and actual planning is concerned, but the final adoption of plans must rest with the legislative or ordinance making departments. City planning powers in the United States have not yet been given to engineering departments and until recently city councils have taken no cognizance of the subject. Under such conditions and in view of the large amount of educational and publicity work required before not merely the general public but also the local governing body could be brought to the need for a city plan, the usual American method has been followed in the city planning as in other new fields, that is, special commissions have been created to make city planning studies, formulate plans, win public interest and support, and finally to inspire city councils with sufficient interest and confidence in the wisdom of the plan to secure their adoption by those bodies. Many, in fact probably the majority, of the existing city planning commissions have only advisory powers. But in a growing number of cases, through either general enabling State legislation or as a part of carefully phrased new city charters, city planning commissions are given a certain measure of joint jurisdiction with city councils over city planning. This may go as far as to provide that no public improvement affecting the general plan of the city—such as changes in the street system, waterfront, railways, parks, or location of public buildings—shall be made by the city council without having been first passed upon by the city planning commission. In some cases the control goes farther than this; in fact, there may be a certain measure of coordinate jurisdiction by the city planning commission and the city council, although the body possessing powers of appropriating money for public improvements, the city council, has the final say as to changes in the city plan. The present strong tendency, and the method that meets with general approval among those who have given the subject careful attention, is to vest in city planning commissions at least broad powers to make city planning studies and submit to the city council a comprehensive scheme for the future development of the city plan. To coordinate the work of the city planning commission with that of the more firmly established branches of the city government it is quite common to make two or more of the regular city officials ex-officio members of the city planning commission. Frequently and quite logically the city engineer or commissioner of public works is made a member. Whether this is done or not, most of the city commissions that are making real progress are provided with a city planning engineer who has one or more assistants, according to the size of the city and the volume of work being attempted. The number of city planning commissions in the United States is not definitely known, but may number 200 since the early part of 1920. Pennsylvania alone had 26 commissions, and for some years past it

has been compulsory for every city in Massachusetts and for every town of more than 10,000 population to have a commission while similar commissions are compulsory or permissive for some classes of cities in many other States. According to a statement issued late in 1920 by Flavel Shurtleff, secretary of the National Conference on City Planning, at least 32 cities started active city planning programmes during the year. The list follows: Auburn, Me.; Fall River and Springfield, Mass.; Newport, R. I.; Bristol, Conn.; Perth Amboy, N. J.; Chester, Pa.; Norfolk, Va.; Atlanta, Ga.; Memphis and Knoxville, Tenn.; New Orleans, La.; Columbus and Youngstown, Ohio; Anderson, Muncie, Terre Haute, Indianapolis, and Marion, Ind.; Rockford and Decatur, Ill.; Grand Rapids, Kalamazoo, and Lansing, Mich.; Oklahoma City, Okla.; Kansas City, Wichita, and Topeka, Kan.; Phoenix, Ariz.; Kansas City, Mo.; Spokane and Tacoma, Wash. The diversity of practice in appointing new commissions is shown by the following regarding some of the commissions created in 1920: Atlanta, Ga., has created a city planning board of 25 members; a new commission at Davenport, Iowa, consists of 12 citizen members with the mayor and city attorney as members ex-officio; at Kansas City, Mo., the new commission has eight members, and there is also an advisory city planning board, consisting of ex-officio and other members, the former including the city engineer and the landscape architect of the park department, while the latter include the members of the Board of Control of the Kansas City Railways Co.; across the river in Kansas City, Kan., a commission of seven members, one from each ward of the city, was established; a new commission at Los Angeles has 51 members "men and women." Chambers of commerce or similar commercial bodies often do the large amount of pioneer work required in many cities before city authorities, who should lead the way, have the conviction or the courage to create a city planning commission. Thus, late in 1920 a committee of the Commercial Club of Duluth, Minn., submitted a report advocating the creation of a commission from which the following is taken: "A city planning commission must have authority to act. The commissioners should be chosen by the judges of the District Court from men who are free from political affiliations and who are not influenced by selfish motives in seeing the city develop along practical and economic lines. The commission would employ a city planning expert as is done in Chicago, Cleveland, Portland, Washington, etc., who will prepare the plans, arrange the zones and advise the commission on all architectural engineering, landscape, water front, main arteries, streets, parks, etc.; he will employ his own experts, and will co-operate with and receive all assistance from the city engineer's and water and light department engineer's offices. He will also act for the city as between the electric light, street car and telephone companies, coöperate with the traffic squad of the police department and with the fire department and the mail carriers' division of the post office, unite all the requirements of these bodies and consider the same in relation to alterations of the present main arteries and future extensions, the platting of new districts and subdivisions. Such a commission can organize the development of zones so that property-owners will feel reasonably sure of the maintenance of

their property values. There is no such assurance at present." The proposal that the members of the commission should be appointed by the "Judges of the District Courts" and the reasons therefore given in the quotation are eloquent testimony as to the lack of confidence in the regularly constituted authorities of our cities to conduct municipal affairs in a businesslike manner. In the tentative draft of the new city charter for Montreal, Canada, nearing completion in the latter part of 1920, provision is made for a city planning commission along the lines laid down in the model city charter framed by the municipal programme committee of the National Municipal League a few years ago. The tentative scheme for Montreal provides for a city planning board of five members to include the director of public works and the director of public utilities and three citizens chosen for their knowledge of city planning. All acts of the city government affecting the city plans would be submitted to the board for report and recommendation before adoption by the city council. The planning board would be required to submit annually to the city council a report summarizing the board's activities for the fiscal year covered, together with a plan for improvement of the city plan year by year during the three ensuing years, with cost estimates. During the past year the city planning board of St. Paul, Minn., put at the head of its board one of the principal members of the city engineering staff of St. Paul who gave up his old position for the new. The board has been in existence about a year and through the good showing that it has made has obtained an appropriation of \$50,000 for use during two years in order to make surveys and an improved city plan.

CARRYING OUT CITY PLANS. The Chicago Plan Commission leads the country in the progress it has made in carrying out the city plan formulated with great care a dozen years ago. A summary of the work done during the 10 years 1909-19, published in 1920, showed 12 major public improvements promoted by the commission and already under way. Including money contributed from all sources these improvements will cost about \$230,000,000, including \$61,500,000 provided by bonds voted by the people; over \$8,000,000 to be met by special assessments; \$162,000,000 to be spent by various railway companies, and \$5,300,000 to be expended by the Forest Preserve Commission. The improvements include street widening and extensions, and street double decking; railway passenger and freight terminals with street approaches; lake front improvements; railway electrification; the acquirement of 14,250 acres of forest preserve; and the development of an outer highway system. The "Plan of Chicago" was made under the leadership of the late Daniel H. Burnham with the encouragement and financial aid of the Commercial Club and was presented to the city with the request that a commission should be created to continue the study and to recommend what part of the plan should be carried out from time to time. The Chicago Plan Commission was appointed Nov. 1, 1909, and made a part of the city government. It has some 300 members, including engineers, architects, business men and city officials. A managing director is employed. City planning work at St. Louis, mentioned in earlier YEAR BOOKS, is being continued with vigor. Progress on the major street plan, con-

sisting of street widenings and openings, was reviewed by Harland Bartholomew, engineer, City Plan Commission, in *Engineering News-Record*, May 13, 1920. Yearly appropriations for the commission for nine years past ranged from \$5000 to \$25,000, that for 1919-20 being \$19,160. Two studies for rapid transit improvements in St. Louis, one made by the City Plan Commission and the other by the St. Louis Department of Public Utilities, are summarized in the *Electric Railway Journal* for Jan. 8, 1921. Both plans are based on traffic investigation studies made by the City Plan Commission. At Detroit the city council has approved a part of the work for the Dix-High-Waterloo thoroughfare proposed by the city plan commission to relieve traffic congestion. This would form a cross-city boulevard across the city from east to west about a mile north of the Detroit River approximately 12 miles long and crossing through the eastern market place and directly in front of the Michigan Central Railroad station. High Street and its extensions in the more congested sections of the city would be widened to 80 feet, which, in accordance with recent standards, is considered sufficient for the newest types of auto trucks and other commercial vehicles. The consideration that should be given to modern motor vehicles in city planning studies was discussed in a paper on "The Urban Auto Problem" by Ernest P. Goodrich before the National Conference on City Planning at Cincinnati in May, 1920. Among other things, Mr. Goodrich suggested heavier pavements, the equivalent of greater street widths in some special cases by providing trafficways at several levels which would segregate the different classes of traffic; private rights of way for automobile trucks carrying freight to railway stations; rounding off street corners and setting back buildings at important intersections, and for extremely heavy traffic "pairs of one-way streets in lieu of extra wide thoroughfares." At the same conference William J. Wilgus read a paper on the "Relation of Railroad Terminal Problems to City Planning." Summarizing, he urged that "passenger and freight terminals for serving the community should be so located, in liaison with suitable lines of urban distribution, that the business and residential sections shall be given ample opportunity for healthy expansion, that congestion will be avoided on the city streets; that full opportunity will be given for the esthetic development of the community, and the delays and cost to the public will be reduced to the minimum." Inner and outer railway belt lines were suggested.

An element of city planning, in this case on a large scale, is illustrated by the plan for the further development of rapid transit for New York City, designed to provide for the needs of the next 25 years. This plan, which was submitted by Daniel L. Turner, chief engineer of the Transit Construction Commission of New York City in the latter part of 1920, provides for 830 miles of single track at an estimated cost of \$350,000,000. Special features of the plan are 21 two-track subaqueous tunnels, three cross-town moving platforms, and two-story subways having eight and six tracks. (For extensive extracts from the report, with map, see *Engineering News-Record*, Oct. 14, 1920.) Taking a still broader view of city transportation needs by considering the whole metropolitan district of New York, an evening was given to the presenta-

tion and discussion of a paper by Henry M. Brinckerhoff before the New York Section of the American Society of Civil Engineers on Nov. 17, 1920. The study took into account the rapid transit needs of the 5,830,000 population (census of 1920) in New York City and the city of Yonkers, and the 1,720,000 population in the five trans-Hudson counties of New Jersey, making a total population of 7,550,000. By 1945 Mr. Turner, in the report mentioned above, estimated that the population of New York City alone would be 9,000,000. The growth to the west, now largely cut off by the Hudson River barrier, should be provided for according to the views presented by Mr. Brinckerhoff. Suggestions were presented for east and west rapid transit routes extending from Long Island across the East River, Manhattan Island, the Hudson River, and well to the westward into New Jersey. As a means of breaking down the "artificial political Chinese wall," the boundary between the State of New York and the State of New Jersey, Mr. Brinckerhoff suggested adding "a 49th State to the Union" and naming it the "State of Manhattan." He would let New York City, Jersey City, and Newark keep their own local governments, but would "place matters of common interest to the whole metropolitan area, such as transportation, water, sewerage, and port development, in the hands of a governmental body representing the people of all metropolitan New York." At a subsequent 1920 meeting of the same engineering society, the needs of the metropolitan port of New York were considered (see *Engineering News-Record*, Nov. 25 and Dec. 23, 1920, for the rapid transit and port discussions).

ZONING. Besides zoning plans completed during the year, zoning work was begun in a number of cities, of which only a few can be mentioned. At Philadelphia, under the new charter, the mayor appointed a zoning commission of 18 members, of which seven were heads of departments, nine represented various local organizations, and two were unattached. The City Planning Commission of San Francisco completed a tentative zoning ordinance about the middle of the year after considerable study and mapping work done under the direction of the city engineering department. Six use zones were proposed: (1) For single family dwellings; (2) for all classes of residences and various other buildings not considered detrimental to a residence section; (3) a commercial district in which residences allowed in (1) and (2) would be permitted; (4) light; and (5) heavy industrial districts; (6) slaughter house and unrestricted sections. At Portland, Ore., a zoning ordinance dividing the city into eight use and six height districts and containing restrictions as to the area of lot that may be occupied by each building was adopted early in the year by the city council, but was defeated on referendum vote at the November election. The popular majority against the ordinance in a total vote of over 60,000 was less than 1000. The defeat of the scheme was attributed in part to division of interest with the scores of names and measures to be voted for on the same ticket. After the election petitions were filed with the city council by 149 city precincts that voted yes, asking that they be allowed to come under the zoning ordinance. Meanwhile, the city has the advantage of the building code which provides that before permits for buildings of several classes can be granted, hearing must

be given to all the property owners within 200 feet of the proposed building. A zoning ordinance adopted at Niagara Falls provides for the future division of the city into eight use districts and places a limit upon the height and bulk of buildings thereafter erected in the various districts and upon the areas of yards, courts, and other open places. Under the ordinance the city council will create a zoning commission of five members to plan the districts provided for in the ordinance and to see that the terms of the ordinance are carried out. Any proposed amendment to the zoning ordinance must go to the zoning commission, be reported upon by it, and must be acted upon by the city council within 30 days and no amendment to the ordinance can be adopted by the council contrary to the recommendation of the zoning commission except by unanimous vote of the council. Violations of the zoning ordinance are made misdemeanors subject to fine or imprisonment or both. At Milwaukee a city zoning ordinance was framed by the Board of Public Land Commissioners, which is in effect the city zoning and planning commission, and submitted to the city council. It provides for use, height, and area of buildings. A report embodying a tentative zoning plan for Lakewood, Ohio, notable for its exposition of zoning principles, especially for a city that is chiefly residential in character, was made to the local authorities late in the year by Robert H. Whitten, advisor to the City Planning Commission of Cleveland, Ohio. The city is divided into six classes of use districts, of which two are residential and four are business and industrial. There are four classes each of height and area districts. The height and area districts are superimposed over the use districts so that each portion of the city is in some one of the six classes of use districts, in some one of the four classes of height districts and also in some one of the four classes of area districts. The boundaries of the various classes of districts are all shown on a single map. (See *Engineering News-Record*, Oct. 21, 1920.) Acting under Congressional authorization of March 1, 1920, requiring that a zoning plan be prepared and go into effect on September 1st following, a zoning scheme for the District of Columbia was prepared within the time stated by a Zoning Commission consisting of the commissioners of the District of Columbia, the officer in charge of public buildings and grounds of the District of Columbia, and the superintendent of the United States Capitol Building. An appropriation of \$5000 was made for the work. The chairman of the committee was Col. C. W. Kutz, engineer commissioner, District of Columbia, and Harland Bartholomew, engineer of the St. Louis City Plan Commission, was consultant. The enforcement of the zoning plan is vested in the Commissioners of the District of Columbia. The plan provides for residential, first and second commercial, and industrial districts; height districts with limits of 35, 55, 85, and 110 feet; area districts for detached and semi-detached houses in which rear yard and one side yard are required and buildings may occupy 40 per cent of an interior lot and 50 per cent of a corner lot; area districts for row houses and small apartments in which a rear yard is required and buildings may occupy 60 per cent of an interior lot and 70 per cent of a corner lot; areas for larger apartment houses, stores, and shops, located in the commercial district, in

which commercial buildings may occupy 100 per cent of the first floor level but other buildings may not occupy more than 75 per cent of an interior lot or more than 90 per cent of a corner lot; an area district consisting of high valued downtown area territory in the second commercial district and the industrial districts in which a rear yard is required on interior lots above the first floor and a lot occupancy of not more than 90 per cent is permitted.

LEGAL DECISIONS UPHOLDING ZONING. An important decision was rendered by the New York State Court of Appeals upholding the zoning regulations adopted in 1916 by the New York City Board of Estimate and Apportionment. The portion of the zoning ordinance of East Cleveland, Ohio, which prohibits the building of apartment houses in certain areas of the city was upheld in the Court of Common Pleas of Cuyahoga County. Excerpts from the East Cleveland decision are given in *Engineering News-Record*, May 20, 1920. The decision of the New York Court of Appeals held that the zoning regulations in question cannot be considered as "an incumbrance since it was a proper exercise of the police power" which "within constitutional limitations depends largely upon the discretion and good judgment of the municipal authorities with which the courts are reluctant to interfere." This decision was rendered in a suit brought by the Lincoln Trust Co. against the Williams Building Co. to secure cancellation of a land purchase contract on the ground that, owing to the zoning regulations, an unencumbered title could not be given. The Court held that the contract in question was deliberately entered into and that it was not "claimed that defendant was misled, deceived, or improperly influenced in making it." A decision having at least an indirect relation to zoning handed down by the State Supreme Court of Minnesota on Jan. 23, 1920, in a mandamus suit brought by the Twin City Building Investment Co. against James G. Houghton, inspector of buildings, to compel the inspector to grant a permit for an apartment house, established the validity of a Minnesota statute of 1915 authorizing Minnesota cities of the first class (Duluth, Minneapolis, and St. Paul) to establish restricted residence districts and exclude apartment houses therefrom by condemnation proceedings. The Court said in part: "It is time the Court recognized the esthetic as a factor in life. Beauty and fitness enhance values in public and private structures, and it is not sufficient that the building is fit and proper standing alone; it should also fit in with surrounding structures. People are beginning to realize this and are calling for city planning by which individual houses may be segregated from industrial and mercantile districts and also from hotel and apartment districts. The act in question responds to this call. . . . We think there is a public use served by the taking authorized by the law of 1915. It does not seem to impinge any inhibition of the State or Federal constitution."

For many other details see Theodora Kimball's "Review of City Planning in the United States, 1919-20" (January, 1921, "National Municipal Review," New York City), and a pamphlet edited by Miss Kimball from information largely gathered by the Detroit City Plan Commission, entitled "Municipal Accomplishment in City Planning" and a list of Published City Reports

in the United States (National Conference on City Planning, Boston).

CIVIC FEDERATION, NATIONAL. See NATIONAL CIVIC FEDERATION.

CIVIC SERVICE REFORM LEAGUE, NATIONAL. This organization, founded in 1881, is devoted wholly to governmental administrative efficiency in the United States. The Thirty-Ninth Annual Meeting of the League was held at Springfield, Mass., on Feb. 26, 1920, at which addresses were given by Hon. Montgomery Schuyler, former minister to Ecuador, Oscar K. Davis, Ellery C. Stowell, William G. Rice, President of the New York State Civil Service Commission, Richard H. Dana, the President of the League, and Hon. Robert Catherwood. Mr. Dana pointed out the recent achievements of the League: For the national service it has aided in securing needed experts on war problems; it has deflated several bills exempting numerous positions from the merit system; it has brought to public attention the incompetency of the explosive inspectors, and of the War Risk Insurance Bureau; it has secured reorganization in the National Civil Service Commission; it has secured a merit system for the appointment of the 9000 presidential postmasters; and it has secured needed reforms in several of the states. The League has been especially active against several "spoils" provisions in bills introduced into Congress. One of these was the 1920 Census bill with its Veteran Preference rider, and another was the Volstead Bill with its provision for prohibition enforcement officers. Modifications were gained on each of these bills. The League has protested strongly against the exemption from the merit system of Deputy Collectors of Internal Revenue, but to no avail.

The Committee on Foreign Service continued to push its recommendations, notably, that the age limit for entering the foreign service be reduced so as not exceed 30 years; the salaries be increased; embassies and consulates be purchased in the principal cities; that the State quota system of appointment be abolished; and the Americanization of the consular service be completed by the appointment of salaried vice-consuls to act in the place of foreigners now serving. Statistics gathered by the committee show that in 1918 there was \$8,874,345,044 of foreign trade (exports and imports) for which there was a total appropriation for the Foreign Service department of \$686,886.09 or \$77.40 per million dollars of foreign trade.

In 1919 a noteworthy addition to the original program of the League was that of applying the merit system to higher directing officials and injecting into the whole of the public service scientific business managers and efficiency experts. This program was pushed actively during the past year. The officers for 1920 were: President, Richard H. Dana; treasurer, A. S. Frisell; secretary, George T. Keyes; and chairman of the executive committee, Arthur R. Kimball. Headquarters are maintained at 8 W. 40th St., New York City.

CLAASSEN, ARTHUR. American conductor, Died in San Francisco, March 16. He was born in Stargard, Germany, Feb. 19, 1859. He received his musical education from Müller-Hartung and A. W. Gottschalk in Weimar, where his first compositions also attracted the attention of Liszt. Having been operatic conductor at Göttingen and Magdeburg, he came to America in 1884

as conductor of the Brooklyn Arion, which under his leadership soon became one of the finest singing societies in the East. This post he held for 25 years, appearing also frequently as conductor-in-chief of many great singing festivals. In 1910 he removed to San Antonio, Texas, where he founded the Symphony Orchestra and the Beethoven and Mozart Societies (both choral), all of which became important factors in raising the musical standards of the South. He has written a number of fine male choruses a *capella*; a *Festival Hymn* for soli, chorus, and orchestra; a symphonic poem, *Hohenfriedberg*, and other works for orchestra.

CLAIRE, HENRY LEWIS. British surgeon, died January 24. He was born at Dublin, Ireland, 1858, and was educated at Trinity College, Dublin. He held several appointments in the Jamaica medical service, where he was president of the Jamaica branch of the British Medical Association. In 1913 he was president of the first West Indian intercolonial division on tuberculosis at Trinidad and was appointed surgeon-general and chief medical official of health for the colony of Trinidad and Tobago in 1907, which position he was holding at the time of his death. His publications included various reports on public health.

CLARKE, THOMAS SHIELDS. Painter and sculptor, died in New York City, November 15. His work had been displayed at many of the large exhibitions in America. He was born at Pittsburgh, Pa., on April 25, 1860; graduated at Princeton in 1882 and studied in France and Italy. His work won medals in exhibitions at London, Madrid, Berlin, Paris, and at the Chicago exposition. He was a member of the Royal Society of Arts of London and other well known art societies. In New York, San Francisco, Chicago and other cities there are many works of his in bronze and marble, among which may be mentioned the "Cider Press Monument" in Golden Gate Park, San Francisco, Cal.

CLARK UNIVERSITY. A non-sectarian institution for graduate study only at Worcester, Mass., founded in 1889. In the fall of 1920 there were 50 students enrolled in the graduate department and 205 in the collegiate. There were 27 members in the faculty. The endowment funds of the institution amounted to \$4,239,350, and the income for the year was \$191,620. There were 91,000 volumes in the library. President, Wallace W. Atwood.

CLASSICAL LITERATURE AND SCHOLARSHIP. See PHILOLOGY, CLASSICAL.

CLAY, CECIL. British social leader and humorist, died in London, May 26. He was born in 1847. For many years he was a familiar figure in London club-land. He was educated at Harrow and Oxford where he distinguished himself chiefly in athletics. His father was a politician of some note and a friend of the eminent men of his time. Young Cecil early showed an especial gift for conversation and became a prominent and attractive figure of society. He wrote for the stage *A Pantomime Rehearsal* which enjoyed much popularity and which was frequently repeated. His first wife was Rosina Vokes whom he accompanied to America, and his second wife, Miss Grace Toulmin, the niece of Sir Charles Young, who wrote *Jim the Penman*.

CLAY PRODUCTS. The value of the clay products marketed in the United States in 1919

was estimated by the United States Geological Survey, at \$260,790,000, the highest yet recorded. This is an increase of \$40,216,000 compared with 1918 and \$28,277,000 compared with 1917, and is nearly \$100,000,000 greater than the value ten years ago. The value of brick and tile products constituted 71 per cent and that of pottery products 29 per cent of the total. The removal of war-time restrictions, the partial return to normal conditions, and the crying need of the country for buildings of all kinds, which consume the greater proportion of the clay products, caused the great increase in the output and value of the clay products marketed in 1919, though the increase in the selling price no doubt helped to increase the value. Every kind of clay product except fire brick made a gain in quantity as well as in value, and the increase in the output of almost every product was greater proportionally than the average increase in price. The increases in 1919 were made in spite of a shortage of labor, fuel, and transportation and the timidity of capital to invest in new buildings on account of the high cost of construction and the consequent small returns. The large decrease in the output and value of fire brick, which was used in immense quantities in the manufacture of munitions during the war, was only natural. Another cause for the decrease, however, was the strike in the steel industry, the principal consumer of fire brick.

CLEARINGS, BANK. See FINANCIAL REVIEW.

CLEGHORN, JAMES. British surgeon, died, June 14. For some years before his death he had been surgeon-general in the Indian medical service. He was born in 1841 and graduated at Edinburgh University and at the Royal College of Surgeons, Edinburgh. Having entered the Indian medical service in 1865, he became director-general and sanitary commissioner. In 1897 he was the delegate of the Indian government to the Venice plague conference. His publications included many papers in the medical journals.

CLEMENCEAU, GEORGES. See FRANCE.

CLEOPATRA'S NIGHT. See MUSIC, Opera.

CLERY, JAMES ALBERT. British surgeon, died February 10. For some years before his death he was surgeon-general of South Africa. He was born in Ireland, Dec. 21, 1846, and educated at Trinity College, Dublin. Having entered the army in 1871, he served in the Nile expedition, in the Sudan, and in the Boer War, winning medals and frequent mention in despatches. He retired in 1906.

CLEVELAND, OHIO. See CITY PLANNING.

CLEVELAND, OHIO. See MUNICIPAL OWNERSHIP.

CLEVELAND SYMPHONY ORCHESTRA. See MUSIC, Orchestras and Novelties.

CLIMATE. See METEOROLOGY.

COAL. The following table prepared by the United States Geological Survey in 1920 shows the world's production from 1910 to 1919:

THE WORLD'S PRODUCTION OF COAL,
1910-1919
(Metric tons of 2,205 pounds)

Year	Production in part estimated	Per cent. produced by United States
1910	1,160,000,000	89.2
1911	1,189,000,000	87.9
1912	1,249,000,000	88.8
1913	1,341,000,000	88.5
1914	1,208,000,000	88.5
1915	1,190,000,000	40.5
1916	1,270,000,000	42.1

1917	1,386,000,000	44.2
1918	1,332,000,000	46.2
1919	1,170,000,000	42.1

The figures after 1913 are not final on account of the interruption in the compilation of government statistics, especially in central and eastern Europe. The following table shows the production of the United Kingdom, France, Belgium, Germany and the United States in 1913 and 1919, respectively, in millions of metric tons.

	1913	1919
United Kingdom	292	237
France (present boundaries)*	44	22
Belgium	23	18
Germany (present boundaries) ^b —		
Bituminous	173	109
Lignite	87	94
United States	517	494

* Includes Alsace-Lorraine. ^b Excludes Alsace-Lorraine and the Saar.

From 1913 to 1919 the output of bituminous coal in the four countries shown in the above table fell from 532,000,000 to 386,000,000 of which decrease, nearly 40 per cent was in Germany and about 20 per cent in the United Kingdom and Belgium. The output of the Saar Valley fell from about 12,000,000 in 1913 to 8,000,000 in 1919, or a decrease of over 30 per cent. In France the reduction was largely due to the destruction of the mines. The output of lignite in Germany in 1919 was greater than before the war being 94,000,000 as compared with 87,000,000 in 1913, but was less than in 1918. After the dissolution of Austria-Hungary the resources of coal and lignite of which the output was about 55,000,000 tons before the war, passed over to Czecho-Slovakia, whose production in 1919 was about one-third less than the same regions produced in 1913.

It was estimated that the total coal production of the world in 1919 had fallen back to the level of 1910. It showed a considerable decline since 1918, estimated at 162,000,000 metric tons.

In connection with the turning over to the Allies of supplies of coal and the reduction of its coal fields Germany was face to face with many fuel problems during the year, important among which was the question of adequate coal for the operation of the various manufacturing industries. Various solutions were proposed, some of which looked to the nationalization of the mines and mineral industries. Towards the end of the year it appeared that a sort of super-trust system devised by Herr Stinnes, a German capitalist with vast holdings in industrial projects and a man of great political influence and strength, was meeting with very favorable consideration. This plan as advocated by Herr Stinnes and his followers provided for coöperative trusts of related industries, such as coal mines and iron and steel works; controlled by boards in which the consumers would have the majority.

A subcommittee composed of Stinnes and two other mine owners at the end of the year were in conference in Essen, the heart of the western mining district, to consider industrial problems. It was stated that the result of this conference was that the two opposing groups, one favoring government ownership, the other favoring coöperative trusts, had reached the understanding that the most complete and economical utilization of all industrial products in the interest of the whole nation must be secured at all costs.

In the opinion of many this would be best secured by the adoption of Stinnes' plan.

There was advanced, however, as an alternative proposition which was also under discussion, a scheme for socialization of the mining land only, with the mines to remain as before, in private hands. Numerous objections to the proposition were advanced, but being in the nature of a compromise, its adoption was looked upon as a possibility.

PRODUCTION IN 1920. Revised estimates of anthracite production in the United States in 1920 prepared by the United States Geological Survey cover the entire Pennsylvania output, including river anthracite and the product of Sullivan county, and also embrace mine fuel and sales to the local trade. A total output of 89,100,000 tons was indicated for 1920, divided as follows:

January	7,588,000	July	8,261,000
February	6,525,000	August	8,025,000
March	7,857,000	September	4,646,000
April	6,225,000	October	8,069,000
May	7,959,000	November	7,453,000
June	8,171,000	December	8,321,000
Total for year		89,100,000	

COAL INDUSTRY IN 1920. Although the coal strike of 1919 ended in the middle of December of that year its effects were felt throughout the early months of 1920. There was only a fair production of coal in January, February, and March, and not enough to replenish the depleted stocks after the end of Federal control of the railways February 29th. There was improved bituminous production under private operation in March. Production, however, fell to a very low figure in April after the outlaw strikes of the switchmen early in that month, and production continued at a low rate. Matters were made worse by the dislocation of coal cars throughout the country as the result of the heavy western movement of eastern cars during the strike. Car shortage reached a very high figure at the mines. The stocks were estimated on March 1st as amounting to only 24,000,000 tons. The Transportation Act of 1920 enabled the Interstate Commerce Commission to aid in relieving the situation. The law provided that whenever, in the opinion of the Commission, an emergency existed the Commission might authorize a departure from the scheme of transportation. The Commission on learning that such an emergency existed took active steps to remove the difficulty. The following recommendations for the future were proposed by A. G. Gutheim in an address before the American Economic Association, December 28:

"First—The bituminous coal mining industry is developed far beyond the present or immediate future demands of our domestic and foreign trade in bituminous coal.

"Second—Our railroad facilities are probably adequate to-day to handle our necessary annual bituminous output produced with fair uniformity of rate throughout the year, and will certainly be adequate when post-war rehabilitation of the properties is completed.

"Third—Our railroad facilities are not, and without great waste of investment never can be, adequate to handle currently our necessary bituminous coal production when obtained by weekly peaks of 13,000,000 tons and valleys of 7,500,000 tons in a 12-month period, as has been the case these past two years.

"Fourth—While the powers of the Interstate

Commerce Commission are sufficient to force transportation for such extremes of production the exercise of such powers necessarily involves discrimination against other traffic and should be avoided if at all possible.

"Fifth—While our present railroad regulation can force production, it can control distribution but slightly, and prices not at all.

"Sixth—Extreme variation in rates of production not only unduly burdens the transportation machine, but invites further overdevelopment of mining, with the consequence of great irregularity in miners' working time.

"Seventh—So long as regulatory powers exist to force coal production at the expense of other industry, similar power should exist to compel proper distribution of such production should necessity therefor arise.

"Eighth—Provision should be made, by additional legislation if necessary, for the securing and compilation by proper governmental authority, of current and complete statistics of production, distribution, consumption and stocks of bituminous coal.

"To conclude, let it be kept in mind that production, transportation, distribution, and consumption are the four big factors in the bituminous coal industry, and should be reasonably well balanced. Of course, such disturbances as war and nation-wide strikes constitute emergencies which require corresponding treatment. But under ordinary conditions proper coördination of these four big factors is possible and the result should be better conditions of mining and rail-roading, lower costs of production and transportation, and better prices and distribution to the consumer. These are the ends toward which we should aim."

COST OF PRODUCTION IN ENGLAND. In a statement given out in 1920 the Mines Department of Great Britain issued the following summary of the current costs of production of coal:

Costs of production	Per cent disposable commercially	
	s.	d.
Wages	26	3.06
Stores and timber	5	5.64
Other costs (management, salaries, insurances, repairs, offices, selling and general expenses, etc.)	2	6.15
Royalties	0	7.62
Total costs	34	10.47
Deduct proceeds of miners' coal	0	1.72
Net costs	34	8.75

See AGRICULTURE; also GREAT BRITAIN; and WAR OF THE NATIONS.

COAL STRIKES. See STRIKES AND LOCK-OUTS; GREAT BRITAIN and UNITED STATES.

COASTLAND. (*German KUSTENLAND*). A region in the former kingdom of Austria under the Austro-Hungarian monarchy, comprising the crownlands of Istria, Gorz, Gradisca, and Trieste. Area, 3078 square miles; with a population in 1910 of 893,797; estimated 1913 at 938,008. The important seaport Trieste is its largest city, with a population before the war of 246,500, including its territory. Other cities are Pola, a former Austrian naval base, 59,300 and Gorz (Goritz), 32,600.

COATES, ALBERT. See MUSIC, *Orchestras*.

COCHIN-CHINA. The southernmost division of the French colonial possessions of Indo-

China (q.v.); with an area estimated at 20,000 square miles, which is divided into 17 provinces. The total population in 1914 was placed at 3,050,785, of whom 11,251 were Europeans (exclusive of the military). The capital is Saigon which in 1919 was estimated at 64,496. The largest city is Cholon with about 190,085 of whom 97,211 were Chinese. The chief product is rice; of late years the rubber product has become important. Other crops are corn, bananas, oranges, sweet potatoes, and other vegetables, betel-nuts, pepper, tobacco, coffee, and sugar-cane. Stock-raising and fishing are important interests. In 1918, 9018 steamships of 1,086,000 tons entered at the port of Saigon. Total exports in 1918 were, 280,363,349 francs, and imports, 165,071,936. In 1919 the budget balanced at 9,085,358 piastres. The colony is under a resident-governor and a colonial council of 18 members. It is represented by one deputy in the French parliament.

COE COLLEGE. An institution of the higher education at Cedar Rapids, Iowa, founded in 1881. The enrollment of students at the summer session in 1920 was 227 and for the regular fall session, 617. The faculty numbered 36. The productive funds amounted to \$1,000,687, and the income for the year was \$182,000. The library contained 16,000 volumes. President, J. A. Marquis, D.D., LL.D.

COINS, FOREIGN VALUE OF. The estimates of the value of foreign coins for the beginning of 1921 shown on page 157 were issued by the United States Director of the Mint.

COKE. The outstanding features of the coke industry in 1919 were the great slump in demand that followed the armistice and a remarkable increase in the proportion of by-product coke as compared with beehive coke. According to preliminary estimates made by the United States Geological Survey, the total production of coke in 1919, including beehive and by-product but excluding gashouse coke, was 44,821,000 net tons, a decrease, when compared with the production in 1918, of 11,657,000 tons, or 21 per cent. The decrease was confined almost entirely to beehive coke, the production of which fell off 36 per cent. The output of by-product coke decreased only 3 per cent. The output of by-product coke consequently exceeded that of beehive coke for the first time. In 1918 about 46 per cent of the total coke made in the United States was produced in by-product ovens and 54 per cent in beehive ovens. In 1919 the proportions were reversed, 56 per cent coming from by-product and only 44 per cent from beehive ovens. The year 1919 thus marked a turning point in the history of coke manufacture in the United States. The revised total output of beehive coke during 1920 is placed at 20,825,000 net tons.

Preliminary returns made by operators of by-product coke plants indicate that the total output of by-product coke during the calendar year 1920 was approximately 30,680,000 net tons. This was an increase of 5,500,000 tons, or 22 per cent over the output reported in 1919, when 25,143,542 tons were produced. Nearly every State reported a substantial increase in production. More than 850 new ovens were put in operation and 580 more were reported under construction at the close of the year. On the basis of 1919 practice the coal charged to produce the coke recovered would be about 43,800,000 net tons. The total production of all coke in 1920 (excluding gas house coke) was 51,505,000 tons, of which

Country	Legal standard	Monetary unit	Value in terms of U. S. money	Remarks 1
Argentina Republic.	Gold	Peso	\$0.9648	Currency: Paper, convertible at 44 per cent of face value; exchange rate, gold \$0.7725; paper \$0.34.
Austria-Hungary	Gold	Krone	.2026	Exchange rate about \$0.0025 = 1 krone.
Belgium	{ Gold } { Silver }	Franc	.1930	Member Latin Union; gold is actual standard. Exchange value \$0.0625.
Bolivia	Gold	Boliviano	.8893	12 1/2 bolivianos equal 1 pound sterling. Exchange rate about \$0.2717.
Brazil	Gold	Milreis	.5462	Currency: Government paper; exchange rate about \$0.1375 to the milreis.
British Colonies in Australasia and Africa	Gold	Pound sterling	4.8665	
Canada	Gold	Dollar	1.0000	Exchange rate about \$0.8425.
Central American States:				
Costa Rica	Gold	Colon	.4658	Exchange rate \$0.23 = 1 colon.
British Honduras	Gold	Dollar	1.0000	
Nicaragua	Gold	Cordoba	1.0000	
Guatemala	{ Silver }	Peso	0.5502	Guatemala: Currency, inconvertible paper.
Salvador	Gold	Colon	.5000	Honduras: Currency, bank notes.
Honduras	Gold	Peso	.8650	Exchange rate about \$0.49.
Chile	Gold			Currency: Inconvertible paper; exchange rate about \$0.185.
		Amoy	.9019	
		Canton	.8992	
		Cheefoo	.8626	
		Chin Kiang	.8810	
		Fuchau	.8848	
		Haikwan		
		(customs)	.9177	
		Hankow	.8439	
		Kioochow	.8740	
		Nankin	.8925	
		Niuchwang	.8458	
		Ningpo	.8671	
		Peking	.8798	
		Shanghai	.8288	
		Swatow	.8831	
		Takau	.9076	
		Tientsin	.8740	
		Yuan	.5910	
		Hongkong	.5932	
		British	.5932	
		Mexican	.5976	
China	Silver	Tael		The tael is a unit of weight; not a coin. The customs unit is the Haikwan tael. The values of other taels are based on their relation to the value of the Haikwan tael.
		Dollar		The Yuan silver dollar of 100 cents is the monetary unit of the Chinese Republic; it is equivalent to .644 + of the Haikwan tael.
Colombia	Gold	Dollar	.9788	Currency: Government paper and gold; exchange rate about \$0.87 to 7 gold pesos.
Cuba	Gold	Peso	1.000	
Denmark	Gold	Krone	.2680	Exchange rate \$0.1515 = 1 krone.
Ecuador	Gold	Sucre	.4867	Exchange rate \$0.80.
Egypt	Gold	Pound (100 piasters)	4.9437	The actual standard is the British pound sterling, which is legal tender for 97 1/2 piasters.
Finland	Gold	Markka	.1930	Exchange rate \$0.026 = 1 markka.
France	{ Gold } { Silver }	Franc	.1930	Member Latin Union; gold is actual standard. Exchange value \$0.059.
Germany	Gold	Mark	.2382	Exchange rate about \$0.0138 = 1 mark.
Great Britain	Gold	Pound sterling	4.8665	Exchange value \$3.53.
Greece	{ Gold } { Silver }	Drachma	.1930	Member Latin Union; gold is actual standard. Exchange value \$0.074.
Haiti	Gold	Gourde	.2500	
India [British]	Gold	Rupee	.3244	Currency: Inconvertible paper. (10 rupees equal 1 pound sterling.) Exchange rate \$0.26.
Indo-China	Silver	Piaster	.5942	
Italy	{ Gold } { Silver }	Lira	.1930	Member Latin Union; gold is actual standard. Exchange value \$0.034.
Japan	Gold	Yen	.4985	Exchange value \$0.482.
Liberia	Gold	Dollar	1.0000	Currency: Depreciated silver token coins. Customs duties are collected in gold.
Mexico	Gold	Peso	.4985	Exchange value, gold peso \$0.50.
Netherlands	Gold	Guilder (florin)	.4020	Exchange value \$0.318.
Newfoundland	Gold	Dollar	1.0000	
Norway	Gold	Krone	.2680	Exchange rate \$0.151 = 1 krone.
Panama	Gold	Balboa	1.0000	
Paraguay	Gold	Peso (Argentine)	.9648	Currency: Depreciated Paraguayan paper currency.
Persia	{ Gold } { Silver }	Ashrafi	.0959	Currency: Silver circulating above its metallic value.
Peru	Gold	Kran	.1013	Gold coin is a commodity only.
Philippine Islands	Gold	Libra	4.8665	Exchange rate about \$4.26.
Portugal	Gold	Peso	.5000	Exchange rate about \$0.465.
Roumania	Gold	Escudo	1.0805	Currency: Inconvertible paper; exchange rate about \$0.0845.
Russia	Gold	Leu	.1930	Exchange rate about \$0.011 = 1 leu.
Santo Domingo	Gold	Ruble	.5148	
Serbia	Gold	Dollar	1.0000	
Siam	Gold	Dinar	.1930	
Spain	{ Gold } { Silver }	Tical	.3709	
Straits Settlements	Gold	Peseta	.1930	Valuation is for gold peseta; currency is notes of the bank of Spain, exchange value approximately \$0.13.
Sweden	Gold	Dollar	.5878	Exchange rate \$0.405.
Switzerland	Gold	Krona	.2680	Exchange rate \$0.1975 = 1 krona.
Turkey	Gold	Franc	.1930	Member Latin Union; gold is actual standard. Exchange value \$0.152.
Uruguay	Gold	Piaster	.0440	(100 piasters equal to the Turkish L.) Exchange rate about \$0.70 = 1 Turkish L.
Venezuela	Gold	Peso	1.0342	Exchange rate \$0.752.
		Bolivar	.1930	Exchange rate about \$0.175.

1 The exchange rates shown under this heading are recent New York quotations and are given merely as an indication of the values of currencies which are fluctuating in their relation to legal standards.

40.4 per cent was made in beehive ovens and 59.6 per cent in by-product ovens.

COLBY, BAINBRIDGE. New York lawyer, appointed Secretary of State February 25th. He was born at St. Louis, Dec. 22, 1869; graduated at Williams College in 1890 and studied at the Columbia Law School, New York City, and practised in New York City after 1892, appearing in a number of celebrated cases including the settlement of the affairs of the Mark Twain publishing house and several important insurance cases. He was a member of the New York Assembly 1901-1902, and became a thoroughgoing supporter of Theodore Roosevelt. At the time of the latter's candidacy for the Presidential nomination in 1912 he had charge of the contests to seat Roosevelt delegates in the Republican National Convention and later he was delegate to the Progressive National Convention (1912). He was nominee for United States Senator on the Progressive ticket in 1914 and 1916. After the nomination of Hughes he refused to follow Roosevelt and went over to the support of President Wilson whose policies he defended in a number of very effective speeches. In 1917 he was appointed commissioner of the United States Shipping Board and became a member of the United States Shipping Board Emergency Fleet Corporation. At the Inter-Allied Conference at Paris in 1917 he was a member of the American mission and he was present at Paris also during the sessions of the Peace Conference. His appointment as Secretary of State was criticized in the press and in political circles generally on the ground that Mr. Colby had shown himself unstable in his political views. In general he had followed the lines that seemed at the time moderately progressive and his changes may be attributed chiefly to that tendency. He has been a witty and effective speaker and inclined in his public addresses to impromptu and somewhat extreme remarks that have been used against him subsequently by his opponents. An instance of this was his emphatic endorsement of the Sinn Fein movement.

COLERIDGE, ERNEST HASTLEY. British author, died, February 19. He was born Dec. 8, 1846, and educated at Balliol College, Oxford, where he was a tutor from 1872 to 1893. He edited the letters of Samuel Taylor Coleridge and selections from his unpublished notebooks; *Life and Correspondence of John Duke, Lord Coleridge* (1904), and the *Poetical Works of Lord Byron*. in seven volumes, (1898-1903).

COLGATE UNIVERSITY. A non-sectarian institution of higher learning at Hamilton, N. Y., founded in 1819. The enrollment for the fall of 1920 was 692 and the members of the faculty numbered 41. The income from endowment and student fees was \$243,694. The library contained 90,567 bound volumes, and 125,000 pamphlets. President, Elmer Burritt Bryan, LL. D., L. H. D.

COLLEGES. See UNIVERSITIES AND COLLEGES.

COLLEGES, AGRICULTURAL. See AGRICULTURAL EDUCATION.

COLLINGS, JESSE. British publicist, died at Birmingham, England, November 20. Throughout his career he devoted himself to a crusade for the creation of a peasant proprietary and was known as the pioneer of small holdings. He was born in Devonshire, in December, 1831, in humble circumstances, but he succeeded at the

age of thirty-three in becoming a successful merchant in Birmingham, of which city he became mayor at the age of forty-seven. In 1880, he was elected to Parliament and carried through a bill for the extension of allotments. In 1886, he brought in a motion in favor of small holdings that resulted in the overthrow of the Conservative ministry. He founded the Allotment and Small Holdings Association and gave himself to the cause with great devotion. To him was attributed the party cry of "Three acres and a cow." He was made Privy Councillor in 1892. He was member of Parliament from 1886 until his retirement in 1918.

COLLINS, GILBERT. Jurist, died in Jersey City, N. J., January 29. He was born at Stonington, Conn., Aug. 26, 1846, and admitted to the bar in Jersey City in 1875. In 1884-6 he was mayor of that city and from 1897-1903 justice of the supreme court of Jersey City. In politics he was a Republican.

COLLISSON, WILLIAM ALEXANDER HOUSTON. British clergyman, died February 1. He was born at Dublin, Ireland, May 20, 1865, and educated at Trinity College, Dublin, where he studied music. He organized a series of popular concerts at Dublin and afterwards at Belfast and London. He was ordained in 1898 and after holding many charges became pastor of All Saints at Twickenham in 1912. His compositions include a variety of comedy operas, cantatas and songs, and he wrote *Dr. Collisson in and on Ireland*.

COLMAN, SAMUEL. Painter, died March 27. He was born at Portland, Me., March 4, 1832, and studied painting in New York City and in European countries. Among his principal pictures are the "Ships of the Western Plains," "Moonrise in Venice," "Spanish Peaks, Colorado," and the "Mosque of Side-bou Hac." The last two were placed in the Metropolitan Museum of Art and in the New York Public Library.

COLOMBIA. A republic of South America, situated in the northwestern part of the continent. Capital, Bogota.

AREA AND POPULATION. Owing to boundary disputes with other countries the estimates of area vary. A provisional estimate made after the boundary agreement with Ecuador in 1917 placed it at 435,000 square miles; the estimate at the census of 1912 was 440,846 square miles which corresponds closely to more recent estimates. The independence of Panama was recognized by the Colombian government in the treaty with the United States signed, April 6, 1914, in return for the sum of \$25,000,000 and the reservation of certain rights in the Canal Zone. According to the census of 1912, the total population was 5,071,101 and the average density per square mile was 11.5. There are 14 departments, seven commissaries and two intendancies. The above figures for population do not include about 30,000 uncivilized Indians. The capital, Bogota, had a population in 1912 of 139,277. The chief commercial towns with their populations are as follows: Barranquilla, 64,554; Manizales, 34,720; Medellin, 47,354; Cartagena, 36,632; Cali, 27,747; Bucaramanga, 19,735; Cucuta, 20,364. Barranquilla is an important port of shipment being connected with the coast by a railway 17 miles in length; Medellin is a mining centre; and Bucaramanga and Cucuta are both important coffee centres.

EDUCATION AND RELIGION. Instruction is free, but not compulsory. According to the reports in 1920 there were 4422 primary schools with an attendance of 333,658 pupils. In 1917 there were 384 secondary and professional schools with 33,115 pupils and 98 art and trade schools with 7044. There are two normal schools in each department, with the exception of Santander which has three and Huila which has none. The professional schools include an agricultural school, law school, medical school, and schools of engineering, etc. There are also night schools for workingmen in Bogota and other cities. In 1919 the expenditures for public instruction amounted to 1,096,810 pesos. There is a university at Bogota, one of the oldest on the continent, having been founded in 1572. The other universities are under the control of the departments. They are situated at Medellin, Cartagena, Popayan and Paato. At Medellin there is also a well-known school of mines which is under national control.

PRODUCTION, ETC. The staple product is coffee; of late years the cotton industry has been increasing in importance. Tobacco also is grown. Wheat is grown on the Bogota plateau to supply the flour mills in and near that city. The cattle industry was flourishing in the years following the war and new grazing lands were developed in various parts of the country. The principal cattle regions of Colombia at present are the Magdalena, Cauca, and Sinu River Valleys. There are immense tracts of land in the southeast part of the country capable of development for this industry, but they are impracticable at present on account of lack of transportation facilities. The various placer and quartz gold mines were active during the year 1918, but mining costs were augmented considerably by the difficulty of obtaining skilled workmen, the high cost of machinery and supplies, and the increasing cost of local labor. The actual value of the gold produced was slightly over \$6,000,000. The drilling for petroleum was carried on exclusively by a single American corporation in 1918, but there were several which carried out active exploration work and were quietly engaged in preparing for active operations as soon as the relaxation of commerce restrictions should make it possible to bring equipment from the United States. In the meantime American and other foreign oil interests had been actively leasing the petroleum rights on the best privately owned lands having clear titles, and geologists had been carefully studying and mapping those sections of the country showing indications of oil.

The petroleum industry has grown to become of great prospective importance.

The restrictions placed upon exports by the belligerent powers cause a brisk demand for all Colombian manufactured products, but many manufacturers, for the same reason, encountered great difficulty in obtaining raw materials, especially in the match, soap, and ice industries. There was a considerable rise in prices of these articles, but the removal of restrictions caused a slight decline, though not, by any means, to previous levels. While Colombia is far from being an industrial country, its manufacturing plants are increasing in number each year and their products are improving in quality. The three principal manufacturing centres are Bogota, Barranquilla, and Medellin, and the lead-

ing products are (in the order of their importance): Cotton textiles, shoes, cigarettes and cigars, beer, flour, chocolate, soap, and matches. Straw hats (so-called Panama hats) are also largely manufactured in the interior.

The foreign trade of Colombia for 1918 resulted in a favorable trade balance of around \$10,000,000 (practically all in credits in New York), though both imports and exports were below normal, in tonnage if not in values. As nearly as can be approximated from the data available the total exports were about \$32,000,000 as against imports of \$22,000,000. The chief export is coffee. In 1918 from the port of Barranquilla were shipped 82,500,000 pounds valued at \$11,700,000 to the United States alone, being about 78 per cent of the total exports to the United States. The chief imports in 1918 were dry goods, drills and sheetings, machinery, hardware, builders' hardware, iron sheets, rods and wire, paper, cement, resin, paints and oils, caustic soda, medicines, automobiles, office fixtures and appliances, and wines and liquors. Foodstuffs were in demand, but receipts were below normal on account of the above mentioned conditions.

FINANCE. The Colombia peso, worth 97 cents at par, rose for the first time to a premium over the American dollar in 1918, owing to the increasingly favorable trade balance of Colombia with the United States and the prohibition of gold exports to the United States. The budget estimates for 1920 were: Revenue, 23,855,253 pesos; expenditures, 27,792,581 pesos. The main source of revenue in 1920 was the customs and the next to that was the salt tax. The leading items of expenditures in 1920 were the department of the interior and the national debt service. The consolidated debt in 1920 amounted to 2,848,260 pesos, and the floating debt to 10,840,654 pesos.

COMMUNICATIONS. In 1918 the railways had a total mileage of 740. There were 22,000 kilometers of telegraph lines in 1920. In 1917 the vessels entered at Cartagena numbered 234 with a tonnage of 413,174; of these 113 were American and 36 were British.

DEFENSE. There is compulsory military service for a year or year and a half. The army consists of 12 infantry regiments which form three divisions, and of a cavalry regiment, an artillery section, an engineering battalion, and a transport battalion. The peace strength is placed at about 6000 and the war strength at 55,000.

GOVERNMENT. The executive power is vested in the president, elected by direct vote for four years and not eligible for two consecutive terms, and in a responsible ministry consisting of the following departments: Interior, foreign affairs, finance, treasury, war, public instruction, commerce and agriculture, and public works. The legislative authority resides in a congress of two houses, the Senate and the House of Representatives. The Senate has 34 members elected indirectly for four years and the House 92 members elected by the people for two years. The president at the beginning of 1920 was Señor Marco Fidel Suarez.

COLLISIONS. See RAILWAY ACCIDENTS.

COLORADO. **POPULATION.** According to the preliminary report of the census of 1920, there were 939,629 residents in the State, Jan. 1, 1920, as compared with 799,024 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 59,991, an in-

crease of 29.9 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Prod., bu.	Value
Corn	1920	843,000	17,450,000	\$12,215,000
	1919	704,000	11,757,000	16,695,000
Oats	1920	255,000	8,058,000	4,835,000
	1919	249,000	6,524,000	5,872,000
Wheat	1920	1,240,000	22,821,000	80,808,000
	1919	1,388,000	16,615,000	38,582,000
Barley	1920	190,000	4,674,000	3,506,000
	1919	171,000	3,334,000	4,001,000
Rye	1920	115,000	1,357,000	1,425,000
	1919	135,000	1,188,000	1,544,000
Broom corn	1920	7,000	* 1,800	91,000
	1919	14,000	* 2,400	240,000
Hay	1920	1,608,000	* 3,392,000	41,556,000
	1919	1,560,000	* 3,060,000	56,574,000
Beans	1920	63,000	504,000	1,588,000
	1919	69,000	448,000	1,568,000
Potatoes	1920	78,000	10,920,000	8,786,000
	1919	92,000	11,040,000	18,768,000
Gr. sorghums	1920	255,000	4,335,000	3,641,000
	1919	300,000	4,350,000	5,220,000

* Tons. * Bales.

MINERAL PRODUCTION. The estimates of the United States Geological Survey of mineral production in 1919 and 1920 were as follows:

Gold, dollars	Silver, ounces	Copper, pounds	Lead, pounds	Zinc, pounds
7,613,400	5,572,407	3,600,000	44,600,000	42,000,000
9,867,927	5,639,516	3,310,675	35,859,090	51,445,429

The increase in the output of lead and copper and the maintenance of the zinc production to 80 per cent of that in 1919 can be attributed in part to the fact that the Sunnyside Company's new 500-ton concentration-flotation mill at Eureka, San Juan County, began operations early in 1920 and continued operations steadily throughout the year, producing both lead and zinc concentrate. The three lead-smelting plants at Pueblo, Durango, and Leadville, were operated steadily on ores from Colorado and Idaho and zinc residues from Oklahoma and at a slightly increased capacity over that of the closing days of 1919. The Salida smelter was closed in February but had not been in the market for ores for several months before that date. The zinc oxide plant at Leadville continued operations on low-grade zinc carbonate ores. As a result of reorganization assuring a steady supply of zinc carbonate ores from the Downtown mines, a new block of furnaces was completed in August, but the new block was not placed in operation because of the waning market for zinc oxide. The Ohio zinc oxide plant at Canon City was operated until early in December on zinc carbonate ores from Leadville and from camps in Utah and Nevada. The Empire Zinc Company constructed and set in operation as a trial a very modern zinc oxide plant at Canon City, where is situated also that company's magnetic separation plant, which has been successfully operated for many years on Leadville zinc sulphide ores. The River Smelting and Refining Company's plant at Florence for the treatment of low-grade copper-lead-zinc ores by the matting and fuming process was operated until December. The Cripple Creek gold district, in Teller County, labored under the difficulties of high costs and the unchanging value of gold but produced \$4,500,000 as compared with \$5,796,713 in 1919. Mining at Leadville, where a variety of metals are produced was at a low ebb at the end of 1919, but ore shipments increased during 1920 and four furnaces were operated at the smelter for the greater part of the year. Pyritic ore carrying some gold and several ounces of

silver to the ton was shipped in considerable quantity to the General Chemical Company's sulphuric acid plant at Denver. Lead-zinc sulphide ore was shipped to zinc retort plants and to zinc oxide plants. Some manganese ore also found a market. The Derry Ranch dredge, below Leadville, resumed operations in May after the usual enforced idleness during the winter and was successfully operated until December.

EDUCATION. According to the *Colorado Year Book* of 1920, the schools of the State numbered 3057 with 7279 teachers, and the salaries of teachers ranged from an average of \$68.40 a month in one-teacher schools to \$106.45 a month in high schools. The total enrollment in public schools was 191,199. The institutions of higher learning supported by the State are: University of Colorado, Boulder; State Teacher's College, Greeley; State Normal School, Gunnison; and State Agricultural College, Fort Collins; School for the Deaf and the Blind, Colorado Springs.

CHARITIES AND CORRECTIONS. According to the State board of charities in 1920 the institutions of the State were as follows: State Industrial School for girls, Morrison; State Reformatory, Buena Vista; State Home for Dependent and Neglected Children, Denver; State Home and Training School for Mental Defectives, Ridge and Grand Junction; State Industrial School for Boys, Golden; State Penitentiary, Canon City; State Hospital (Insane Asylum), Pueblo; Soldier's and Sailor's Home, Monte Vista; Industrial Workshop for the Blind, Denver.

ELECTIONS. The vote in the presidential election of 1920 was as follows: Harding (Republican), 173,248; Cox (Democrat), 104,936; Debs (Socialist), 8046; Christensen (Farmer-Labor), 3016; Watkins (Prohibitionist), 2807; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 178,816; Hughes (Republican), 102,308; Benson (Socialist), 10,049; Hanly (Prohibitionist), 2793. The vote for governor in 1920 was: Shoup (Republican), 174,456; Collins (Democrat), 108,694; and the vote for United States Senator: Nicholson (Republican), 156,577; Scott (Democrat), 112,890; Stevens (Farmer-Labor), 9041; Thomas (Independent), 8665.

OFFICERS. Governor, Oliver H. Shoup; Lieutenant-Governor, George Stephan; Secretary of State, James R. Noland; Treasurer, E. Mulnix; Auditor, Arthur M. Strong; Attorney-General, Victor Keyes; Superintendent of Public Instruction, Mary C. C. Bradford.

COLORADO, UNIVERSITY OF. A co-educational State institution of the higher education, at Boulder, Col., founded in 1876. The enrollment for the summer session of 1920 was 1730, and for the fall session, 2169. The faculty numbered 264, of whom 23 were added in the course of the year. The library contained 116,000 volumes. In 1920 a new Liberal Arts building was in process of construction at a cost of \$400,000 and the Macky Auditorium was being completed, at a cost of \$110,000. The General Education Board of the Rockefeller Foundation offered \$700,000 toward the construction of a medical plant and \$50,000 a year toward its maintenance for a period of years, provided that the State made up the balance, which was estimated at \$1,500,000. President, George Norlin, Ph.D.

COLORADO METHODISTS. See **METHODISTS, COLORADO.**

COLUMBIA UNIVERSITY. A non-sectarian institution of learning, whose principal buildings are at Morningside Heights, New York City. It consists of Columbia College, the undergraduate college of Liberal Arts, whose courses of study lead to the degree of Bachelor of Arts; the School of Law conferring the degree of Bachelor and Master of Laws; the College of Physicians and Surgeons, whose courses lead to the degrees of Bachelor of Science and Doctor of Medicine; the Schools of Mines, Engineering and Chemistry, which confer the several engineering degrees and the degree of Master of Science; the School of Architecture, conferring the degrees of Bachelor of Literature and Master of Science; the School of Business recently opened conferring the degrees of Bachelor and Master of Science; the School of Dentistry, conferring the degrees of Bachelor of Science and Doctor of Dental Surgery; the non-professional graduate faculties of Political Science, Philosophy, and Pure Science, whose courses lead to the degrees of Master of Arts, and Doctor of Philosophy; Barnard College, an undergraduate college for women, whose courses lead to the degree of Bachelor of Arts; Teachers College, including the faculties of education and practical arts, with courses leading to the degrees of Bachelor of Science, Master of Arts, and Master of Science; and the New York College of Pharmacy, conferring the degrees of Pharmaceutical Chemist, Bachelor of Science, and Doctor of Pharmacy. There is also a numerously attended summer school which begins immediately after July 4, and there is a thorough system of extension teaching. At Morningside Heights are situated Columbia College, the library, the schools of Mines, Law, Architecture, and other departments of the university proper, Barnard College, and Teachers College. The medical school or College of Physicians and Surgeons, is on West 59th Street and the College of Pharmacy on West 68th Street. The university conducts a summer camp at Morris, Conn., the site having an area of 585 acres. The total number of students receiving instruction from the university in the fall of 1920 was 23,793 (allowing for duplicates). Of the number registered 2456 were undergraduates (Columbia College, 1752; Barnard College, 704); 6157 graduate and professional students; and 9004 students in extension. In 1920 the summer school students numbered 9780. The attendance at specific schools was distributed as follows in 1920: Graduate faculties, 1121; Law, 543; Medicine, 387; Business, 311; Journalism, 130; Mines, Engineering and Chemistry, 182; Pharmacy, 519; Teachers College, education, 1535; Teachers College, practical arts, 1219. The teaching force numbered 1504. The productive funds in 1920 were \$34,473,304 and the total of gifts was \$2,305,081.

During 1920 the institution lost by death, Alfred J. Moses, Professor of Mineralogy; Francis Sedgwick Bangs, trustee of the university since 1906, Willard T. Barbour, Carpenter Lecturer on English legal history; Frederick B. Jennings, trustee of Barnard College since 1900; Francis M. Burdick Dwight, Professor Emeritus of Law; Miss F. Tallman, Assistant Professor of Religious Education in Teacher's College; Albert H. Stevenson, Professor of Preventive Dentistry; George M. Lefferts, Professor Emer-

itus of Laryngology; Luther Herbert Alexander, Instructor in Romance Languages and Literature in Barnard College. The largest single gift during the year was that from the estate of the late Joseph R. DeLamar for the creation of the DeLamar fund for the benefit of the school of medicine. Among other gifts may be mentioned, Cragin endowment fund, \$56,482; will of Sarah E. Mower, \$53,809; Hugo estate, \$21,037; Borden's Condensed Milk Company, \$16,000; Phoenix estate, \$12,125; Clarence H. Mackay for surgical research, \$12,000; John S. Kennedy estate, \$10,572; T. M. Cheesman estate, \$10,000; Gerard Beekman estate, \$10,000; General Horace W. Carpentier estate, \$20,710; alumni fund committee for deficiency in cost of maintenance, \$69,804.

The library contained 471,000 volumes. Arrangements were made in the spring for the preparation and publication through the Columbia University press of the complete works of John Milton under the editorship of members of the department of English and Comparative Literature. Preparations were being made for the erection of the new building for the school of business which was to be on the corner of Broadway and 116th Street. The resources of Barnard College were largely increased during the year and its budget appropriations for the year ending June 30, 1920, were about \$480,000 and its property was valued at \$6,250,000. Teachers College has also grown rapidly in recent years. Its property was valued at \$8,150,000 and the budget appropriations for the year ending June 30, 1920, were about \$1,690,000. President, Nicholas Murray Butler, LL.D.

COMETS. See **ASTRONOMY**.

COMMERCE. For foreign trade see **UNITED STATES** and articles on foreign countries.

COMMISSION-MANAGER. See **MUNICIPAL GOVERNMENT**.

COMMISSION PLAN. See **MUNICIPAL GOVERNMENT**.

COMMUNITY MUSIC. See **MUSIC, General News**.

COMMUNITY SERVICE. This organization is the outgrowth of the War Camp Community Service, and its object is, through non-sectarian and non-partisan channels, to provide healthy recreation for communities, and especially where those communities are industrial. With the giving of more leisure time to the workman and the passing of the saloon, new interests are necessary for the workman, in order to avoid this feeling of "unrest" that has been passing over the country since the war. During the year Community Service sent trained organizers into many communities, first to study the situation and see what was needed, and then organize the community to the filling of those needs. Both capital and labor have supported this effort. Social gatherings for purposes of entertainment and lecture, besides the organization of many sports has been the result. National headquarters of Community Service are maintained at 1 Madison Ave., New York City.

COMORO ISLANDS. See **MAYOTTE AND THE COMORO ISLANDS**.

CONCILIATION, INDUSTRIAL. See **LABOR ARBITRATION AND CONCILIATION**.

CONCRETE. See **BUILDING**.

CONDENSED MILK. See **DAIRYING**.

CONGO, BELGIAN. A colony of Central Africa belonging to Belgium; formerly the Congo

Free State founded in 1885 by Leopold II, king of the Belgians, but since 1908 annexed to Belgium and directly under the Belgian government. Area and population estimates vary. Area, from 909,654 square miles to 913,127 square miles. Population, from 9,000,000 to 15,500,000, the latter being the estimate of Sir H. Johnstone. The prevailing element in the native population is the Bantu stock, estimated at 7,000,000. At the beginning of 1919 the European population was placed at 3831 of whom 2340 were Belgians. The leading cities are Boma, the capital, Matadi, Banana, Leopoldville, Stanley Pool, Elizabethville, Kambove, Bandundu, and Niangara.

PRODUCTS. The chief products are rubber, palm-nuts and palm-oil, white copal and cocoa. Coffee is grown successfully and there is an abundance of ivory. In the native villages, rice, cotton and tobacco are largely grown. Cattle-raising flourishes in the regions that are not infested by the tsetse fly, and mining is carried on, the chief mineral products worked being gold, diamonds and copper. Coal, iron, tin, and manganese are also found. In 1918 about 8000 natives were employed in the gold mines. There are important copper mines near Kambove.

COMMERCE. Total imports in general trade in 1918 amounted to £2,014,301 and in special trade £1,504,190. According to the Board of Trade returns the imports into Great Britain from Belgian Congo in 1919 amounted to £878,235 and the exports from Great Britain to Belgian Congo amounted to £1,226,130. Of the special imports in 1918, the share of the United States was valued at 501,404 francs.

COMMUNICATIONS. The Congo is navigable for nearly 100 miles above its mouth, that is, to Matadi, and there are fifteen government steamers in this section. It becomes navigable again above Stanley Pool for a distance of nearly 1600 miles, that is as far as Stanley Falls. Its tributaries are also navigable for a considerable distance. The railway mileage on Jan. 1, 1920, was 1250, the longest lines being those from Bukama by way of Elizabethville to the frontier of Rhodesia (456 miles), the Kindu-Kongolo line (327 miles), and the Matadi-Leopoldville line (248 miles). Within the Congo railway system are included two sections of the Cape-to-Cairo railway. The distance to Cape Town from Elizabethville on the Cape-to-Cairo railway is estimated at 2300 miles. In 1918 the post offices numbered 49 and the telegraph lines had a mileage of 2065.

GOVERNMENT. The colony is under a minister appointed by the king and a colonial council of which he is president and which consists of 15 members of whom nine are appointed by the king. The colony is governed locally by a governor-general, aided by several vice-governors-general. The governor-general at the beginning of 1920 was M. Henry.

CONGO FREE STATE. See CONGO, BELGIAN.

CONGO, FRENCH. See FRENCH EQUATORIAL AFRICA.

CONGREGATIONALISM. Statistics to Jan. 1, 1920 show that this denomination has in the United States, 5959 churches, 713 home missionary churches, 808,122 members, 728,619 Sunday school pupils, 1460 men's organizations, with 86,897 members, 2693 young people's societies, with 104,388 members. Statistics for the number of churches and members of the denomination

show a loss as compared with those of Jan. 1, 1919, but among the Sunday schools and other organizations there is a marked increase. Total benevolent contributions for 1919 amounted to \$3,756,986, a marked increase over 1918, while home expenditures for the year amounted to \$12,195,872. The Congregational national missionary societies are as follows: the American Board of Commissioners for Foreign Missions, the Congregational Home Missionary Society, the American Missionary Association, the Congregational Educational Society, the Congregational Church Building Society, the Congregational Sunday School Extension Society, and the Congregational Board of Ministerial Relief. The women are represented by the Woman's Home Missionary Federation and three (regional) woman's boards of missions. The American Board of Commissioners had in 1919, through its 22 missions, 114 stations and 1630 outstations in Africa, Balkans, Turkey, Ceylon, China, Japan, Mexico, Spain, Czechoslovakia, and among the Philippines. Receipts for this work were \$1,580,530. Missionaries numbered 703, and native laborers 5858, serving 86,886 communicants, and through 1138 Sunday schools, teaching 61,877 pupils. Native contributions amounted to \$470,667. The American Missionary Society maintains 194 churches, with 13,980 members and 53 schools with 12,096 pupils. Total receipts were \$779,700.28. The American Home Missionary Society carried on its work in 28 states and territories employing 1502 missionaries and caring for 1973 churches and stations. Of these churches 359 held services in a foreign language. Twenty-two languages were represented. Total receipts for the year amounted to \$695,365.47. The Congregational Church Building Society received during the year some \$431,749 from which loans were made to many churches for building purposes. The Congregational Board of Ministerial Relief paid in pensions \$101,705.66 during the year, while receipts totaled \$226,876.66. The Woman's Board of Missions employed 133 missionaries, besides 650 native teachers. It conducts 34 boarding schools for girls, its educational work includes normal and kindergarten training schools and more than 300 elementary schools. Receipts for the year totaled \$287,321. The denomination assists in the maintenance of nine theological seminaries, the principal, over which the church has direct control, is the Hartford Theological Seminary. The denomination also assists in the maintenance of 40 colleges throughout the United States.

The financial drives inaugurated in 1918 and 1919 have progressed well. The Five Year Tercentenary Campaign for seven million dollars the first year and two million dollars a year after that, worked out successfully. It is now planned to raise fifty million dollars to carry on missionary and educational work. The general administration of the church is under the control of the national council with headquarters at 289 Fourth Ave., New York City. The officers of this council for 1919-1921 are: Moderator, Rev. Henry C. King; assistant moderators, Rev. Robert A. Hume and Rev. W. N. de Berry; secretary, Rev. Hubert C. Herring; treasurer, Rev. Frank F. Moore.

Figures from foreign countries, some of which are of 1917 and others of 1919, show that in England, Wales, Scotland, Ireland, and the Chan-

nel Islands, there were 4992 Congregational churches, chapels and stations with a membership of 492,968; in Canada there were 159 churches, etc., with a membership of 13,315; in Japan there were 138 churches, etc., with a membership of 18,383; in Australia there were 489 churches, etc., with a membership of 21,772, and in South Africa there were 290 churches, etc., with a membership of 20,920 persons.

CONGREGATIONAL METHODISTS. This denomination was originally a part of the Methodist Church, South, but in 1852 a group of ministers in Georgia decided that certain features of the episcopacy and itineracy of that church were objectionable, and broke off relations. The new church was then organized. The objections were governmental and not doctrinal, so that the Methodist doctrines were strictly adhered to, while the government became that of the Congregational Church. The movement spread rapidly for a number of years, so that churches were organized in all the Southern States, and most of the Northern. But in 1887 a large number of members transferred to the Congregational Church, and since that time more and more have left the denomination. Since 1906 more than 25 per cent of the members have been lost, so that at present it looks as though the final result would be dissolution. Some missionary work has been carried on in India, while churches in the United States have been assisted financially. The latest available statistics are for 1919 which show that the denomination had 196 churches, with 220 ministers, and 10,969 church members and probationers. There were 182 Sunday schools, with 1146 officers and teachers, and 8785 pupils. The only periodical is the *Messenger*, published semi-monthly at Ellisville, Miss.

CONGRESS. See UNITED STATES; also LABOR LEGISLATION.

CONNECTICUT. POPULATION. According to the preliminary report of the census of 1920, there were 1,380,631 residents in the State, Jan. 1, 1920, as compared with 1,114,756 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 22,655, a falling off of 15.5 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the year 1919 and 1920:

Crop	Year	Acreage	Prod., bu.	Value
Corn	1920	44,000	1,804,000	\$2,526,000
	1919	50,000	2,900,000	5,220,000
Buckwheat	1920	5,000	85,000	136,000
	1919	4,000	80,000	160,000
Oats	1920	24,000	744,000	558,000
	1919	25,000	775,000	682,000
Rye	1920	7,000	140,000	244,000
	1919	11,000	220,000	440,000
Tobacco	1920	24,400	*36,112,000	12,639,000
	1919	25,000	*39,000,000	18,057,000
Hay	1920	868,000	*475,000	14,120,000
	1919	860,000	*534,000	14,168,000
Potatoes	1920	24,000	2,760,000	4,140,000
	1919	25,000	1,750,000	3,412,000

* Pounds. • Bales.

TRANSPORTATION. The railways of the State are as follows: Hartford and Connecticut Western; New London Northern; New York, New Haven, and Hartford (New York to Springfield, and Boston, Mass.); Norwich and Worcester (operated by the New York, New Haven, and Hartford); and South Manchester. The railway mileage in 1918 was 999.

FINANCE. The latest figures for finance, as supplied by the *State Register and Manual* for 1920, were: Receipts for the fiscal year ending June 30, 1919 (9 months), \$8,014,484; expenditures, \$10,450,605; sinking fund, \$8,332,255. The total indebtedness of the State was \$11,791,100.

CHARITIES AND CORRECTIONS. The State institutions of charities and corrections are as follows: Fitch's Home for Soldiers and Soldiers' Hospital, Noroton Heights; State Hospital, Middletown; State Hospital, Norwich; Farm for Inebriates, Norwich; State Prison, Wethersfield; School for Boys, Meriden; Industrial School for Girls, Middletown; State Reformatory, Cheshire; Training School and Hospital, Mansfield; State Tuberculosis Sanitariums at Hartford, Meriden, Norwich, Shelton, and Niantic.

ELECTIONS. The vote in the presidential election of 1920 was as follows: Harding (Republican), 229,238; Cox (Democrat), 120,721; Debs (Socialist), 10,335; Christensen (Farmer-Labor), 1947; Cox (Socialist-Labor), 1491; as compared with the following vote for president in the election for 1916: Hughes (Republican), 106,514; Wilson (Democrat), 99,786; Benson (Socialist), 5179; Hanly (Prohibitionist), 1789; Reimer (Socialist-Labor), 606. The vote for governor in 1920 was as follows: Lake (Republican), 230,792; Tyler (Democrat), 119,912; Peach (Socialist), 10,154; Krone (Farmer-Labor), 1896; Pryor (Socialist-Labor), 1517; and the vote for Senator: Brandegee (Republican), 216,792; Lonergan (Democrat), 131,824.

OFFICERS. Governor, Marcus H. Holcomb; Secretary of State, Frederick L. Perry; Treasurer, G. Harold Gilpatric; Comptroller, Morris C. Webster; Attorney-General, Frank E. Healy; Adjutant-General, George M. Cole.

JUDICIARY. Supreme Court of Errors: Chief Justice, George W. Wheeler; Associated Justices, John K. Beach, Edwin B. Gager, William S. Case, Howard J. Curtis.

CONSUMPTION. See TUBERCULOSIS.

CONTINUATION SCHOOLS. See EDUCATION IN THE UNITED STATES.

COOKE, MAEJORIE BENTON. Author, died April 26. She was born at Richmond, Ind., and began writing for the magazines at an early age. She also won success for her monologues which she delivered throughout the country after 1902. She was the author of *Modern Monologues* (1903); *Plays for Children* (1905); *The Girl Who Lived in the West* (1910); *Cinderella Jane* (1906); *The Cricket* (1918); three one-act plays by her were produced on the stage.

COOLIDGE, CALVIN. Vice-President elect; in 1920 Governor of Massachusetts. He was born at Plymouth, Vt., July 4, 1872; graduated at Amherst College, Massachusetts and studied law at Northampton, Mass., beginning practice there in 1897. He held the offices of councilman (1892), city solicitor (1900-1), city clerk (1904) in that city, and was the chairman of the city Republican commission in 1904. In 1910-11, he was mayor of Northampton, having meanwhile served as member of the general court for a year (1907-08). In 1912-15, he was a member of the State Senate, of which he was president during the latter part of the period. He was lieutenant-governor from 1916-18 and was elected governor for two terms, 1919 and 1920.

COOLIDGE, THOMAS JEFFERSON. Former United States minister to France, died at Boston, November 17. He was born at Boston, Aug. 20, 1831; graduated at Harvard, 1850, and began business in an important firm of East India merchants. He was afterwards president of several railway and other companies, and was a member of the Pan-American Congress in 1889, minister to France, 1892-3 and a member of the joint high commission to settle disputes between Great Britain and the United States in 1898-9.

COOLIDGE PRIZE. See **MUSIC, Chamber-Music.**

COOPER, EMMA LAMPERT. Artist, died in New York City, July 30. She graduated at Wells College at Aurora, N. Y., and studied art in New York City and in Paris and in other cities of Europe. She was the recipient of many medals and a prominent member of various art associations. Her chief subjects are street-scenes, landscapes, and interiors. She particularly excelled in water color.

COOPERATION. The Coöperative Movement, the "democratic association of men and women consumers, organized for the purpose of supplying their own economic needs" is rapidly becoming in the United States, as it already is in Europe, an important phase of the movement toward industrial democracy. Its principles of democratic control, fixed return on capital, the division of profits in proportion to patronage and not in proportion to money invested, and open membership are in substance the principles of industrial democracy. The movement began with the coöperative retail distribution of the necessities of life—bread, groceries, milk, clothing—but it very shortly developed to include many other enterprises—restaurants, canneries, housing societies, insurance societies, schools—and took over the wholesale as well as the retail distribution of products. Coöperative banks and credit unions, recreational organizations, motion picture shows, and opera houses have been developed in various parts of the world, and it is now estimated that there exist over 120,000 coöperative organizations including several hundred million consumers. In Europe one-third of the population is embraced in coöperative societies. Coöperators have found, however, that full opportunities for free development can be reached only when they control the sources of supplies, and there has accordingly developed a further extension of coöperation to include the production of those articles required by the consumers. The possibilities of coöperative production are perhaps best demonstrated by the activities of the British Coöperative Wholesale Society, which raises wheat on its own land in Canada, transports it in its own ships, and manufactures flour in its own flour mills. It also manufactures many other things, including clothing, shoes, paints, cutlery, lard, bacon, and cocoa.

The movement is largely made up of working people, and, in accordance with its principles, is entirely managed by them. It is everywhere closely allied with the labor movement. Where coöperation is practiced on a large scale, it affords some interesting lights on the problems of adjustment between employer and employee, since under coöperation the members of societies, who are for the most part employees, become also employers of labor. For a discussion of the position of labor under coöperation, see Leonard Woolf, *Coöperation and the Future of Industry.*

Coöperation is based on the fundamental theory that the present competitive system of distribution, with its motive of profit, is wrong. Coöperators believe in the management of the processes of production, manufacture, and distribution by the people. Unlike some of the other advocates of democratic control of industry, they believe in management by the people as consumers, rather than by the people as workers. It is not the fact that a man works in a certain factory that gives him the right to know how it is managed and to regulate the disposition of its profits, according to their view, but the fact that he uses the products of that factory. They envisage the development of coöperation to include not only trade but industry, finance, and agriculture as a part of the function of distributive societies, and thus to bring about the "Coöperative Republic," which, they believe, "will lead to the solution of the social question." For the consumers' organizations, their development, and activities in various countries, see **INTERNATIONAL COöPERATIVE ALLIANCE.** See also **AGRICULTURAL EXTENSION WORK.**

Bibliography. Holyoake, *History of the Rochdale Pioneers*; Sonnichsen, *Consumers' Coöperation*; Webb, *Industrial Coöperation*; Woolf, *Coöperation and the Future of Industry*; Harris, *Coöperation, the Hope of the Consumer*; *History of Coöperation in the United States*; Vol. VI, *Johns Hopkins University Studies*; Powell, *Coöperation in Agriculture.*

COURLAND. Formerly one of the Baltic provinces of European Russia; after the war a part of the state of Latvia. It lies to the north of the Russian province of Kovno and is situated on the Baltic Sea and the Gulf of Riga; area 10,435 square miles; population, estimated Jan. 1, 1915, at 812,300. Capital, Mitau or Mitava, with a population of 46,800; largest city, Libau, with a population of 90,700. It was part of Russia after the third partition of Poland in 1775. See **LATVIA.**

COURT TENNIS. See **RACQUETS.**

COWS. See **DAIRYING.**

COPPER. THE INDUSTRY IN 1919. The principal features of the American copper industry during the year 1919 are shown in a statement of the United States Geological Survey as follows:

The smelter output in 1919 was about 1,310,972,000 pounds, a decrease of 597,561,000 pounds from that of 1918. The production of refined primary and secondary copper from domestic and foreign ore and metal was 1,863,580,000 pounds, which was 612,497,000 pounds less than the production in 1918. Refined primary copper amounting to 326,043,000 pounds was produced from ore or other material imported from foreign countries, principally Chile, Peru, Mexico, and Canada. The discrepancy between the smelter production and the refinery production is due to the fact that 562,000,000 pounds of blister copper and other material was in process of refining at smelters and refineries or in process on Jan. 1, 1919, and though it was smelted in 1918 was not refined until 1919. In 1919 the imports of copper in all forms amounted to 429,388,000 pounds, and the exports of copper in all forms amounted to 516,628,000 pounds, which was 231,062,000 pounds less than the exports in 1918 and 616,205,000 pounds less than those in 1917. The exports in 1919 were less than in any year since 1907. On Jan. 1, 1919, the stocks of refined copper were 180,000,000 pounds, and on Jan. 1, 1920,

they were 631,000,000 pounds, an increase during 1919 of about 451,000,000 pounds. The stocks on Jan. 1, 1920, were several times greater than they have ever been before. In addition to the stocks of refined copper in hand about 310,000,000 pounds of blister copper and material was in process of refining at smelters and refineries or in transit on Jan. 1, 1920. This estimate does not include blister in foreign smelters destined for the United States for refining nor material in transit to the United States from such smelters. The apparent domestic consumption in 1919 was about 876,564,000 pounds, which is 785,106,000 pounds less than that in 1918 and less than the domestic consumption in any year since 1914.

Many causes contributed to decrease the smelter and refinery production, the domestic consumption, and the exports, and to increase the stocks, but the principal cause was a poor market. The industry was working at maximum capacity when the war demand for copper ceased, and it was then, of course, forced to continue production only at the rate required to supply the ordinary commercial and industrial demand. The war demand was stopped so suddenly as to disturb greatly the trade and industrial conditions, and the prospects for the immediate future appeared so uncertain that few industries were able to continue production without first decreasing it greatly and reorganizing, to some extent, their industrial mechanism. Under the peace-time conditions the demand for copper was small and the average price soon fell from 24.7 to about 15 cents a pound. This price was far below the actual cost of the production of a very large part of the previous year's output. All smelters and mines were forced to decrease production. Some were shut down entirely; others were operated at the minimum capacity that would keep the organization intact and the equipment in proper order. Much of the copper in stock could not be profitably held, and the placing of a large part of it on the market kept the price down, though it showed a tendency to rise when the readjustment set in. The price during the year showed many fluctuations but averaged only 18.6 cents a pound, which was about 24 per cent less than the average price in any year since 1915, though the cost of labor and supplies had risen as much as 150 per cent during that time. The labor troubles in other industries decreased the demand for copper, increased the cost of supplies used by the copper industry, and materially increased the cost of production. By the time the price of copper had risen high enough to permit the industry to meet these unfortunate conditions foreign exchange began to fall so rapidly that foreign buyers were unable or reluctant to purchase American copper, and finally the exchange between the United States and foreign centres dropped so low that they could no longer buy it. These conditions almost ruined the foreign market for American copper, and the demand and the price in the domestic market were less than they had been at any time for several years. On the whole, the year was an unsuccessful one, and in view of the conditions it is remarkable that the industry remained as stable as it did.

CONDITIONS IN 1920. During 1920 the American copper industry experienced reduced production and demand for the metal with falling prices and decreased exports. Labor troubles also figured but with little incentive for producers to

run their plants to anything like capacity they were not serious features of the year. The commercial situation not only in America but in Europe, where there were revealed large stores of scrap or unused copper or copper alloys, was appreciated early in the year and was reflected in a decline of prices and diminished demand. The larger producers cut down their output materially in some cases, working at about one-half the rate of 1918, while in general the tendency was to carry on the least expensive workings and only essential developments. The accompanying table of prices in New York and London from the *Engineering and Mining Journal* (New York) represents the market conditions. It will be seen that by October radical reductions were found to be inevitable and after slight price changes during that month, in November there was a decline from 15 to 13.5 cents which provoked some buying among large consumers with adequate resources, but in view of the generally poor conditions of manufacturing industry did not stimulate the market. In fact at the end of the year secondary copper and copper alloys from munitions and other activities were offered by the government at low prices, while as suggested, European consumers were well supplied with large amounts of old copper as well as brass and other alloys obtained of course from munitions manufactured and salvage. In fact it was stated that in England a single firm had salvaged at least 300,000,000 pounds of copper from brass, copper shell bands, and other articles which were available for general consumption at a low price. However, even with general low prices not only for salvaged metal but for exports from America, industrial Europe was in no position to utilize supplies however cheap, and of course the same conditions were more or less true in the United States. As a result there was in progress a general stabilizing of the industry after its great war activities and the closing out of accumulated stocks. Apparently the producers were waiting for industry to absorb the various supplies on the market and then when the inevitable demand came with the development of industry particularly in electric railway and electric power development there would be a large demand for copper which would be met by various properties working to something like full capacity. In this connection reference might be made to the development and construction work in progress during 1920 in Peru where the Cerro de Pasco Mining Company began the construction of a new \$9,000,000 smelter with a capacity of 2500 tons at Oroya, besides additions to its existing plant. The Peruvian Copper and Smelting Company was also engaged in the development of its extensive copper deposits at Yauricocha and Felicidad.

The preliminary estimate of the smelter production of copper from domestic ores during the year 1920 made by the United States Geological Survey, Department of the Interior, was about 1,235,000,000 pounds, compared with 1,286,000,000 pounds for 1919.

The production of refined copper from foreign and domestic ores for 1920 was about 1,573,000,000 pounds, which was approximately 195,000,000 pounds less than for the year 1919.

The apparent domestic consumption was about 910,000,000 pounds, in 1919 it was 877,000,000 pounds.

The stocks of raw and refined copper at the end

MONTHLY AVERAGE PRICE OF COPPER

(From Engineering and Mining Journal)

Month	New York Electrolytic		Standard		London Electrolytic	
	1919	1920	1919	1920	1919	1920
January	(*)	18.918	92.238	118.095	108.619	123.238
February	16.763	18.569	78.700	120.188	95.700	126.950
March	14.856	18.331	76.821	109.533	82.071	118.348
April	15.246	18.660	77.300	103.025	82.200	111.500
May	15.864	18.484	77.767	96.750	81.227	109.200
June	17.610	18.065	83.062	87.864	85.900	101.909
July	21.604	18.576	99.576	90.148	103.046	106.455
August	22.319	18.346	97.300	93.935	106.429	111.143
September	21.755	18.144	100.767	96.881	.....	111.905
October	21.534	15.934	108.418	93.327	.....	104.905
November	19.758	14.257	98.894	84.807	.....	94.614
December	18.295	13.188	103.708	75.702	.....	85.905
Year	18.691	17.456	90.796	97.480	.....	108.839

* No market. New York, cents per pound. London, pounds sterling per long ton of standard copper.

UNITED STATES PRODUCTION, STOCKS, IMPORTS, EXPORTS, AND CONSUMPTION OF
COPPER, 1918-1920

(From Engineering and Mining Journal)

	1918 Pounds	1919 Pounds	1920 Pounds
Smelter output from domestic ores	1,908,500,000	1,288,000,000	1,235,000,000
Refinery production of new copper from domestic and foreign ores	2,432,000,000	1,768,000,000	1,573,000,000
Stocks at the end of the year, at smelters and refineries	742,600,000	904,000,000	*873,000,000
Imports	575,805,115	429,387,594	*407,437,515
Exports	747,689,580	516,627,775	*548,695,851
Apparent domestic consumption	1,662,000,000	877,000,000	*911,000,000

* Amount contains 683,000,000 lbs. of refined copper and 190,000,000 lbs. of blister copper. * Total for ten months ending Oct. 31, 1920, from records of the Bureau of Foreign and Domestic Commerce. * Estimated.

of 1920 were about 874,000,000 pounds, representing a decrease of 30,000,000 pounds from those held at the end of 1919.

The total imports of raw and refined copper for the 10 months ended Oct. 30, 1920, according to the Bureau of Foreign and Domestic Commerce, were 407,437,515 pounds.

Exports of copper for the same period were 543,695,851 pounds, compared with 516,627,775 pounds for the entire year 1919.

The continued decreased production, the large stocks, and the low domestic consumption were due entirely to the generally depressed conditions of industry throughout the world, which did not permit the absorption of as great quantities of copper as had been hoped for.

Low exchange and the great stocks of scrap and secondary copper available both in the United States and abroad also decreased the demand for new copper.

The salient features of the copper industry during 1920 were a small hesitating demand, decreased production, continued small exports, particularly during the last half of the year, and labor troubles. See AGRICULTURE.

COPYRIGHT. Registrations for the fiscal year 1919-20 according to the report of the Register of Copyrights were 126,562 as compared with 113,003 for the year before. Of these, 39,090 were classed as books, but included pamphlets, leaflets and contributions to periodicals. Of this number 37,710 were printed in the United States and 939 printed abroad in a foreign language. The remainder, namely 441 consisted of English books, registered for ad interim copyright. The chief classes numerically of the remaining registrations were music compositions; periodicals; prints and pictorial illustrations; photographs; dramatic or dramatic and musical compositions; works of art, models or designs; maps; motion picture photo-plays. The renewals numbered 2112 as compared with 1906, the year before. The fees paid during the year amounted to \$126,492. The total number of articles deposited during the period from July 1, 1897, to June 30, 1920, was 4,426,091.

On Dec. 18, 1919, the act for the retrospective protection of books by foreign authors was ap-

proved by the president. This provided that all works made the subject of copyright by the laws of the United States first produced or published abroad, during the war whose authors are citizens or subjects of a foreign state which grants similar protection in the case of the United States, shall be entitled to the protection conferred by the copyright laws of the United States. On Feb. 9, 1920, the British government granted "similar protection" for works by citizens of the United States and on April 10, 1920, the President by proclamation extended to the subjects of Great Britain and all her possessions with the exception of Canada, Australia, New Zealand, South Africa, and Newfoundland, the benefits of the United States copyright laws. In the fiscal year 1919-20 a public printing bill was under consideration providing that no government publication or any portion thereof should be copyrighted.

In respect to international copyright, the Register of Copyrights in his annual report made the following recommendations:

The present unequal and inadequate exchange of literary-property protection is a matter of nearly 30 years' standing and requires radical change in order to effect satisfactory solution. There seems to be a general agreement that the fundamental obstacle to a better arrangement is the requirement of American manufacture of books and prints. It is generally agreed that copyright protection should not be subject to this kind of condition. It is the principal obstacle to entry by the United States into the International Copyright Union. The desire has been expressed that the United States should become a member of this union. To do so, however, would require not only the abrogation of the typesetting clause, so far as foreign books are concerned, but the abolition as well of the necessity for deposit of copies and registration. American book publishers believe that an accessible, official registration in the United States of all works in which copyright is claimed is desirable for their business interests. By express provision of law the present certificate of copyright registration is required to be "admitted in any court as prima facie evidence of the

facts stated therein"; and this is a great convenience. So far, also, as books, music, and prints deposited in the Copyright Office are added to the collections of the Library of Congress, their use therein advertises the existence of such works, and the copyright proprietor receives the advantages which may come from the distribution to some 2500 libraries of the printed title cards for copyrighted books.

Possibly some middle course might be adopted for foreign books; e.g. the substitution for the deposit of copies for registration of some arrangement for the regular and systematic filing in the Copyright Office of the printed bibliographical records of works published in foreign countries, and the preservation and indexing of such foreign book catalogues in this office. The information thus made available to American publishers might be sufficient for their needs. So far as American copyright works are concerned, the Catalogue of Copyright Entries now compiled and printed under provisions of law supplies a complete, well arranged and indexed record of all works copyrighted in the United States and the current issues of this catalogue could be supplied to designated offices in other countries.

If some such arrangement could be substituted for the present requirement of deposit of copies and formal registration of books by foreign authors printed abroad, and the manufacturing conditions of the copyright statute of March 4, 1909, be abrogated, at least so far as foreign works are concerned, the United States might enter the International Copyright Union. If something of this kind can not be agreed upon, special arrangements should be entered into with the English-speaking countries to expressly guarantee full protection in all these countries for the works of authors, playwrights, composers, and artists (who are citizens or subjects of any one of them) from the date of the production or first publication of such works in any one of the countries.

This assured protection for all intellectual works throughout all the English-speaking and reading nations should be free of any technical or merely formal requirements, except such as are mutually agreed upon as desirable.

CORBET, EUSTACE KYNASTON. British colonial official, died March 21. He was born in Lincolnshire, June 22, 1854, and educated at Balliol College, Oxford. From 1885 to 1891 he was secretary to the Khedive of Egypt and for the next six years judge in the native court of appeal, after which he became procureur-général of the native courts of Egypt (1898-1908). For the next five years he was director of the Egyptian educational mission in England. He wrote a verse translation of Lessing's poem, *Nathan der Weise*.

CORBETT, HUNTER. Missionary, died at Chefoo, China, January 12. He was born at Leatherwood, Pa., Dec. 18, 1835, graduated at Jefferson College, 1860, and at the Princeton Theological Seminary, 1863. From that time he was foreign missionary in China. In 1906 he was moderator of the Presbyterian General Assembly. Among his writings may be mentioned: *Ten Commandments*; *Benevolence*; and a work on church history, written in Chinese.

COEN. Data on the corn production of the world in 1920 were very incomplete. Preliminary estimates by the International Institute of Agriculture, Rome, for seven countries, including the United States and Argentina, and represent-

ing about 76 per cent of the world's supply, indicated a production of 3,578,935,000 bushels as compared with 3,262,098,000 bushels in 1919.

Estimates of production given for various countries were as follows: Argentina, 1919-20 crop, 258,686,000 bushels; Uruguay, also the 1919-20 crop, 2,784,000 bushels; Hungary, 50,329,000 bushels; Bulgaria, 39,650,000 bushels; Czechoslovakia, 6,138,000 bushels; Italy, 86,609,000 bushels; Indo-China, 5,732,000 bushels; and the Union of South Africa, 36,059,000 bushels. The total yield of Canada was placed at 13,696,000 bushels of husked corn in addition to the usual large tonnage grown for fodder and silage, which for the past year was placed at 5,407,000 tons.

As estimated by the Department of Agriculture, the United States produced 3,232,367,000 bushels as compared with 2,858,509,000 bushels in 1919 and the average of 2,760,484,000 bushels for the five-year period 1914-18. The area devoted to corn in 1920 was given as 104,601,000 acres or 4,529,000 acres more than were grown in 1919, but 2,624,000 acres less than the average acreage for the five-year period mentioned. The average yield per acre was 30.9 bushels or 2.3 bushels above the average yield of 1919 and 5.2 bushels above the average for the years 1914 to 1918 inclusive. The total production and the average yield for 1920 are the highest ever recorded.

The average farm value on Dec. 1, 1920, was 67.7 cents per bushel as against the corresponding price of \$1.349 the year before, and 94.6 cents, the average for the five-year period 1914-18. On this basis the crop of 1920 was valued at \$2,189,721,000; that of 1919 at \$3,851,741,000, and the five year average at \$2,612,389,000. In quantity and value the corn crop of the United States ranks high above any other crop produced, and makes this country by far the most important corn producing country of the world. The annual production of the United States is from 10 to 15 times as large as that of any other country and represents nearly 80 per cent of the world's yield. Before the European war Austria-Hungary, Mexico, and Argentina producing about 200,000,000 bushels ranked next in production. Roumania and Italy each produce about 100,000,000 bushels and British India, Russia, and Egypt each approximately 75,000,000 bushels.

The great bulk of the crop of the United States is consumed at home, and estimates by the Department of Agriculture indicate that practically never more than 25 per cent is shipped out of the county in which it is grown, and not more than 10 per cent reaches the large primary markets, showing that about one-half of the corn shipped out of the county of production goes into the hands of feeders and other local consumers and does not reach the central markets. During recent years exports from the United States have averaged less than 2 per cent of the total crop, and the last year or two corn has even been imported. In October, 1920, 3,000,000 bushels of corn from Argentina were reported on hand in New York. Before the European war Argentina and Roumania were the chief corn exporting countries, the United States ranking third. From January to June, 1920, about 60,000,000 bushels of corn were shipped by Argentina, mostly to Europe. The chief importing countries are the United Kingdom and the countries of northern continental Europe. The requirements of

the United Kingdom range from 80,000,000 to 100,000,000 bushels annually.

A marked decline in the price of corn took place during the latter half of 1920 and the price at the close of the year was only 25 to 30 per cent above the average price before the war. As the cost of production had been exceptionally high, this decline caused farmers to sustain heavy losses. The decline in price was considered due largely to the record crop of 1920 and the reduction by 50 per cent of the demand for pork on the part of foreign countries.

Corn oil, as pointed out in United States Department of Agriculture Bul. No. 904, is becoming better known for its value for edible purposes and its use in many ways in place of cottonseed oil. It has been introduced recently in Arabia and India and found to be an acceptable and satisfactory substitute for ghee, a kind of butter used in those countries.

The European corn borer quarantine was extended during the year under authority of the Department of Agriculture to additional towns in Massachusetts, New Hampshire, and New York, as supplementary to former orders against localities in these States, and in Pennsylvania to prevent interstate shipments of material in which the borer might be carried. The borer was reported the past year from Canada in localities further west than those in which it occurs in the United States. The insect attacks largely the flint varieties. Experiments conducted by the Department of Agriculture and the Indiana Experiment Station showed that seed corn with 100 per cent germination but infected with harmful organisms as indicated by discoloration at the butts of the ears and kernel tips, and by decay in the cobs, gave yields from 10 to 30 per cent smaller than those secured from disease-free seed corn.

CORNELL UNIVERSITY. A non-sectarian co-educational State institution of higher learning, at Ithaca, N. Y., founded in 1865. For the fall session of 1920 there were 5176 students enrolled and for the summer session, 2174. There were 847 members of the faculty. The income from productive funds was \$738,100; from tuition fees \$975,000, and from State and nation \$1,397,800. The university received from August Heckcher of New York \$500,000 for the endowment of research. There was \$5,700,000 added to the endowment for the increase of teachers' salaries and \$708,000 was received for other purposes. The library contained about 630,000 volumes. President Jacob Gould Schurman having resigned, Dean Albert W. Smith was elected acting-president. See AGRICULTURAL EDUCATION.

CORN OIL. See CORN.

CORN STALK BORER. See CORN.

CORPORATIONS. See TAXATION AND TRUSTS.

CORTHIS, ANDRE. See FRENCH LITERATURE.

COSTA RICA. A republic of Central America lying between Nicaragua and Panama, with the Caribbean Sea on the east and the Pacific Ocean on the west and south. Capital, San José.

AREA AND POPULATION. Estimates of area vary, the closest figure apparently being 18,691 square miles. Another estimate places it at about 23,000 square miles. The population according to the estimate of Dec. 31, 1918, was 459,423, of which the greater part were in the

provinces of San José and Alajuela. The vital statistics in 1918 were as follows: Births, 18,412; deaths, 14,034. The immigrants in that year numbered 857 and the emigrants 2157. The city of San José had a population of 38,016. Most of the people of European descent live at or near the capital and in the towns of Cartago, Heredia, Alajuela, Liberia, Punta Arenas, and Limón. The colored population, mostly British West Indians, numbers about 18,000.

EDUCATION. Primary education is free and nominally compulsory. In 1918, there were 315 elementary schools with 950 teachers and an enrollment of 25,857 pupils. There are a lyceum and a college at San José and a normal school at Heredia; there is also a college in each of the towns, Cartago, Alajuela, and Heredia. There is a medical faculty, and schools of law, pharmacy, and dentistry.

PRODUCTION. The chief occupation is agriculture and the chief products are coffee, bananas, and forest products, including rich supplies of rosewood, cedar, mahogany, and other cabinet woods. In 1919 the coffee was exported to the amount of 30,784,184 pounds. Bananas were produced to the amount of 7,129,655 bunches. Aside from agriculture and fruit-raising, the most important industry is gold and silver mining in the districts on the Pacific slope. There is a considerable cultivation of corn, sugar cane, rice, and potatoes, and some tobacco is grown.

COMMERCE. The following estimates in regard to commerce are supplied by the Pan-American Union.

The total foreign trade in 1919 was 54,337,255 colones (colon equals \$0.4653), which compared with the 29,728,809 colones foreign trade of 1918, shows an increase of 24,608,446 colones. In 1919 the imports were 16,167,718 colones, as against 8,032,306 colones in 1918, or an increase of 8,135,412 colones; the exports, 38,169,537 colones, as against 20,696,503, or an increase of 17,437,034 colones. The chief exports of 1919 were coffee, 13,963,473 kilos, worth 25,103,804 colones; bananas, 7,270,624 bunches, worth 1 colon per bunch; woods, balso, cedar, cocobolo, mahogany, etc., 6,740,721 kilos, worth 578,219 colones; hides and skins, 476,683 kilos, worth 385,694 colones; cacao, 1,698,122 kilos, worth 1,158,411 colones; sugar, 2,043,815 kilos, worth 529,428 colones; gold, 1,557,473 colones; silver, 21,456 colones, and coined silver, 100,000 colones.

The following table taken from the *Statesman's Year Book* for 1920, shows the value of the chief imports and exports in 1917 and 1918.

	Imports	
	1917	1918
Cotton goods	\$54,918	\$94,075
Cattle	25,292	94,600
Coffee bags		28,077
Flour	111,859	58,835
Lard	28,189	8,156
Drugs	29,473	16,686
Rice	30,981	9,278
	Exports	
	1917	1918
Bananas	\$868,951	\$682,263
Coffee	812,848	762,181
Gold, silver, and concentrates from mines	214,245	163,724
Hides and skins	70,877	27,214
Timber	62,198	94,420

The following information in regard to the foreign trade in 1919 was supplied by the United States Bureau of Foreign and Domestic Commerce in November, 1920: The total foreign trade in 1919 was 54,337,255 colones, consisting of imports, 16,167,718 colones and exports, 38,-

169,537 colones. The United States still held the first place in foreign trade and in 1919 its share of the import trade increased, but its share of the export trade declined. In 1919 the imports from the United States made up 78.36 per cent of the total and the exports to the United States 55.28 per cent.

COMMUNICATIONS. In 1919 there entered the ports of the republic 479 vessels of 486,131 tons. Four shipping companies send steamships regularly to Limon and there are three lines which touch at the port of Punta Arenas on the Pacific. San José is connected with the ports of Limon and Punta Arenas by railroads. The Costa Rica Railway and the Northern Railway of Costa Rica extend from Alajuela through San José and Cartago to Port Limon, with a branch from Siquires to Guapiles, a branch from Limon to Zent, and a branch from Limon to La Estrella, or a total length of 566 kilometers (1 kilometer = 0.621 mile), and are operated by the Northern Railway Company. The Pacific Railroad, owned by the government, runs from San José to Punta Arenas with branches to Alajuela and Esparta, a length of 134 kilometers. The post offices in 1918 numbered 182 and telegraph lines had a mileage of 15,170.

FINANCE. The monetary unit is the colon with a par value of 46.536 cents and the standard of value is gold. The chief sources of revenue are direct taxation, customs, railways, posts, telegraphs, and liquors; and the chief objects of expenditure are finance, internal development, and public instruction. The following details in regard to the budget for 1920 are supplied by the Pan-American Union:

The national budget, approved January 7th by the President, for the fiscal year 1920, estimates the expenditures at 12,866,553 colones (colon equals \$0.4653) and the revenue at 13,006,000 colones, leaving a probable surplus of 139,447 colones. The expenditures for the year are as follows: Legislative body, 176,630 colones; public instruction, 1,561,408 colones; government section and judicial police, 1,398,829 colones; promotion, 1,263,140 colones; foreign relations, 111,361 colones; justice, 419,880 colones; religion, 20,400 colones; public charity, 160,421 colones; war department and military police, 1,634,349 colones; navy, 35,240 colones; treasury, 1,688,560 colones; payment on the public debt, 4,396,334 colones.

GOVERNMENT. A new constitution was adopted July 13, 1917, and a new election law was passed, Oct. 28, 1918. The president and vice-president are chosen by an electoral college consisting of senators and Deputies. The legislative power resides in a chamber of representatives elected for four years, one-half retiring every two years. Suffrage is universal. There are six secretaries of state appointed by the president and responsible to him: Interior and Police; Foreign Affairs; Justice and Worship; Public Instruction; War and Marine; Finance and Commerce. The President at the beginning of 1920 was Don Julio Acosta, elected December, 1919, and inaugurated May 8, 1920. The first diplomatic representative from Costa Rica since the early part of the war was received in Washington on November 29th. See GUATEMALA.

COST OF LIVING. See PRICES.

COTTON. The cotton crop of the United States for 1920 was estimated at 12,987,000 bales of 500 pounds gross weight, by the Crop Report-

ing Board of the United States Department of Agriculture on Dec. 13, 1920. On Nov. 20, 1920, the International Institute of Agriculture at Rome announced an estimate of 12,098,020 bales. Each of these estimates indicates an increase over the crop of 1919, which was 11,420,763 bales. While the Department of Agriculture estimates a crop larger by 1,500,000 bales than in 1919, the farm value on Dec. 1, 1920, was only \$914,590,000, or about 45 per cent of the value of the previous crop. The estimated average price of cotton to producers on Jan. 1, 1920, was 35.9 cents a pound, as compared with 14 cents on Dec. 1, 1920. On Dec. 13, 1920, according to the Bureau of the Census, there had been ginned of the 1920 crop, 10,878,265 running bales. This included 198,184 round bales, 54,467 bales of American grown Egyptian, and 1291 bales of Sea Island cotton. The continued reduction in the amount of Sea Island cotton is due to the spread of the boll weevil. The American-Egyptian cotton was practically all produced in Arizona and California. These States are estimated to have produced 100,000 bales of this type of cotton in 1920.

The cotton crop of Egypt for 1920 is estimated at 1,225,636 bales of 500 pounds each, an increase of 100,000 bales over the production of 1919. The area planted to cotton in British India in 1920 was about 8,900,000 acres, a reduction of 3.2 per cent from that of 1919 when the crop was 4,666,200 bales. The Mexican crop for 1920, exclusive of that of Lower California which is commonly marketed with that of California, is estimated at 70,000 bales. British South Africa produced in 1919 about 2000 bales of cotton. Burma exported 273,569 tons of cotton in 1919, and Brazil 2594 tons. Production figures for these countries are not available for 1920. Bulgaria has resumed cotton production and an estimated crop of about 1200 bales for 1920 is reported.

The following table shows the cotton crop for 1919, the estimated crop for 1920, and the amount reported ginned to Dec. 13, 1920:

States	Crop, 1919 500 lb. bales	Estimated crop, 1920 500 lb. bales	Reported ginned Running bales
United States . . .	11,420,763	12,987,000	10,878,265
Alabama	713,236	660,000	605,939
Arizona	59,849	110,000	66,794
Arkansas	884,473	1,160,000	885,208
California	56,107	150,000	37,802
Florida	15,922	18,000	17,553
Georgia	1,659,529	1,400,000	1,323,752
Louisiana	297,681	380,000	354,798
Mississippi	960,886	885,000	775,519
Missouri	64,031	85,000	49,592
North Carolina	830,293	840,000	680,054
Oklahoma	1,016,129	1,300,000	860,184
South Carolina	1,426,146	1,530,000	1,364,650
Tennessee	310,044	310,000	234,763
Texas	3,098,967	4,200,000	3,601,851
Virginia	22,528	19,000	12,376
All other States	4,947	15,000	7,485

In addition to the 11,420,763 bales of cotton lint of the 1919 crop, there were produced 611,076 bales of linters and there was received at oil mills 4,018,233 tons of cotton seed. For the year ending July 31, 1920, there were crushed 4,009,860 tons of cotton seed which yielded 1,210,494,748 pounds of oil, 1,815,660 tons cotton seed cake and meal, 1,140,735 tons hulls, and 150,340 bales of hull fibre. The exports of cotton for the year ending July 31, 1920, were 6,598,348 bales, an increase of 934,428 bales over the exports of 1919. The principal shipments were: To the United Kingdom, 3,069,342; France, 576,228;

Italy, 579,159; Germany, 443,179; Japan, 873,096 bales. The imports for the same period were 700,213 bales as follows: Egypt, 485,003; Peru, 63,425; China, 57,186; Mexico, 65,343, and all other countries, 29,256 bales. The world's production of commercial cotton in 1919, exclusive of linters, was about 20,250,000 bales of 500 pounds net, while the consumption for the year ending July 31, 1919, was about 15,970,000 bales.

The number of active and idle spindles engaged in the cotton industry in the world is about 150,000,000. In the United States there were in July, 1920, 34,866,842 active spindles, 15,077,079 of which were in the cotton growing States and 19,589,763 in the other States. These spindles consumed during the year 6,425,344 bales of cotton. In Europe, out of a total estimate of 94,079,692 spindles, 73,121,035 were reported as active for the year ending July 31, 1920. Germany, for the first time since 1914, is reported as having resumed spinning and had 5,230,996 spindles at work out of an estimated total of 9,400,000.

Under a revised plan of operation the government of Great Britain has granted £50,000 annually for five years to the British Empire Cotton-growing Committee. In addition the committee is to receive, as a voluntary contribution from cotton manufacturers in the United Kingdom, 6d for every bale of cotton used. This contribution is estimated to yield about £100,000 annually. Through the committee efforts are being made to develop cotton growing in the British colonies and protectorates. Surveys have been made of India and Egypt and suggestions are made as to probable means for increasing yields and improving the quality of the fibre produced. In India most of the native cottons are short staple and the varieties are badly mixed. Attention is being turned to the breeding of improved strains of the indigenous varieties and some promising forms are said to have been produced. The testing of American varieties is being continued and in many of the states premiums are offered for the growing of American cottons.

A survey of Mesopotamia, as a cotton producing region, has been completed and it is claimed that 200,000 acres could be devoted to growing cotton with the present population, if suitable machinery and transportation are provided. A government experiment station has been established at Bagdad where excellent Egyptian and long staple American cottons have been grown. Substantial progress is reported in cotton growing in Rhodesia and South Africa where the industry is now considered firmly established. A government loan has been secured for Sudan, and with the construction of railways and irrigation works it is expected cotton growing will become an important industry. A British Cotton Research Association has been established at Manchester, England, and a number of technical investigators have been appointed. In cooperation with the Empire Cotton-growing Committee, three botanical research fellowships have been established.

Efforts are being made to develop cotton growing in Belgian Congo where it is claimed about 5000 acres were planted in 1920. An experimental cotton farm has been established near Lusambo, and the American varieties Triumph and Simpkins have been found especially adapted to the local conditions. A French concession

of 25,000 acres for cotton growing in Armenia is reported. The manufacture of cotton is developing rapidly in China. In 1919 there was produced the largest crop ever reported in China, and during the same period 27,743,733 pounds of cotton were imported to supply the mills. Increased interest in cotton growing is reported in Argentina. The principal region of production is in the Chaco Territory where about 150,000 acres were planted to cotton in 1920.

On account of the danger of the introduction of the boll weevil, the importation of cotton seed into Argentina is prohibited. The state of Bahia, Brazil, is aiding in cotton production by the distribution of seed and granting prizes to planters showing the most progress in the improvement of their crops. In Mexico the embargo on the shipment of cotton was removed Sept. 1, 1920, and in its stead an export tax of five centavos per kilo was declared. On Dec. 17, 1920, an import duty of 7½ cents per kilo was placed on all raw cotton entering Mexico.

The cotton situation in the United States, from the producers' standpoint has been far from satisfactory. The rapid fall in price with the incoming of the new crop led to unexpected losses. To check the fall in price attempts were reported to have been made to burn warehouses and gins, prevent the picking of cotton, etc. Various plans were proposed to improve the selling situation, some of which involved government aid and others financial assistance through banking and other agencies. A campaign for a smaller cotton crop in 1921 has been inaugurated in which it is proposed to restrict the area to be planted, a reduction of 50 per cent in the acreage being suggested by some of the advocates of the plan.

The United States Department of Agriculture published the results of a study of 842 farms in Alabama, Georgia, South Carolina, and Texas, to determine the cost of producing the 1918 cotton crop. The average cost was found to have been 23 cents per pound of lint. In order that 85 per cent of the crop should have been produced at a profit it should have sold at 28 cents per pound, and the average price to producers in 1918 was but little above that figure. On account of reduced yields and increased costs, the crop of 1919 probably cost considerably more for its production.

The pink boll worm situation has assumed a rather serious phase. Late in 1919 scattered areas in the Trinity Bay district in Texas, where the pink boll worm appeared in 1917, were found to be reinfested. Some others were found in the Pecos Valley and in the Great Bend country, where the infected cotton was destroyed. In October, 1920, rather wide infestation was found in the Trinity Bay District. No reappearance of the pink boll worm was reported elsewhere in Texas in 1920. The failure to eradicate this pest is thought to have been due to the non-observance and continuance of non-cotton zones about the infested area. The Legislature of Texas passed a new law that became effective June 19, 1920, but it is said to have numerous defects and the Federal authorities think that effective work cannot be carried on under it.

The pink boll worm was found to have invaded several parishes in Southwestern Louisiana, and legislation has been enacted providing for the establishment of non-cotton zones for all the infested districts and regulating the movement of cotton and seed throughout the State. After a

number of conferences a Federal quarantine of Texas and Louisiana was promulgated that became effective August 1, 1920. This regulates the movement of all forms of cotton in the infested portions of the two States concerned. The pink boll worm was found in Dona Ana County, New Mexico, near El Paso, and quarantines are contemplated for this region.

Appropriations available for pink boll work amount to \$838,560, the Federal government contributing \$488,560; Louisiana, \$250,000; and Texas \$100,000.

The cotton boll weevil has continued its advance towards the northern limits of cotton growth. During 1920 the last remaining counties of Georgia became infested, all of South Carolina, and about a dozen counties in South-eastern North Carolina from Union to Onslow counties. The ravages of the boll weevil along the coast region have been so serious as to practically destroy the Sea Island cotton industry. Attempts are being made to produce early maturing varieties of Sea Island cotton that may escape injury by the boll weevil and some promise of success is reported. Early in 1920 it was reported that the boll weevil had been introduced into Porto Rico, but later information indicates that in all probability the pests did not become established.

The use of calcium arsenite for the control of the boll weevil (YEAR BOOK 1919, p. 180) has been widely adopted, and it is reported that fully 10,000,000 pounds of the chemical were used during the past season. The United States Department of Agriculture has devised a wheel-traction dusting machine that is said to be more efficient than any other power machine under present labor conditions.

An international Cotton Congress was held at Zurich, Switzerland, June 9-11, 1920. A World Cotton Conference will be held in Liverpool and Manchester, England, June 13-22, 1921.

COTTON BOLL WEEVIL. See COTTON. **COUNTY AGENTS.** See AGRICULTURAL EXTENSION.

COX, FRANCIS ALBERT. British philanthropist, died, May 25. His whole life was devoted to improving the treatment of animals. He was born June 24, 1862, and was in the civil engineers department of the Great Northern Railway for nearly 30 years. His work on behalf of pit ponies in 1908 led to the creation of the National Equine Defense League, of which he became secretary. In the latter part of his life he devoted himself exclusively to the work of this association. He also carried on an active campaign against the practice of docking horses. In 1915 he was prominent in the work for the relief of the employment of Belgian refugees. He wrote many pamphlets including *A Dog's Life*; *The Pit Pony*, etc.

COX, JAMES M. Democratic candidate for President in 1920; Governor of Ohio. He was born at Jacksonburg, Ohio, March 31, 1870, and educated in the public schools. He was brought up on a farm, worked in a printer's office, and taught in country schools. In his youth he became a newspaper reporter and rose to an editorial position on the *Cincinnati Enquirer*. In 1898 he bought the *Dayton Daily News* and in 1903, the *Springfield Press-Republic*, and formed the News League of Ohio. He was member of the 61st and 62d Congresses, 1909-13 from the third Ohio district and was Governor of Ohio for

the terms 1913-15, 1917-19, and 1919-21. His administrations were marked by a progressive spirit and he did much to promote legislation for the improvement of industrial conditions. See UNITED STATES.

CRANE, W. MURRAY. Former Senator, for a long time a prominent figure in Republican politics, died at Dalton, Mass., October 2. He was born at Dalton, Mass., April 23, 1853, the son of a paper manufacturer and educated at the public schools and Williston Seminary. He entered the paper mill at Dalton and continued to retain an interest in it throughout his life. It became an extensive establishment and produced the paper used by the government for currency and bonds. He was Lieutenant-Governor of Massachusetts, 1897-99; Governor, 1900-02; was elected United States Senator in 1905 and re-elected for the term 1907-13; and he was a delegate to the Republican National Conventions in 1892, 1896, and 1904, and to each of the five thereafter including that of 1920. His business record was remarkable for the skill and tact which he showed in avoiding strikes. As a member of the Senate he made no speeches but exerted a wide influence and showed especial ability in bringing divergent factions into harmony. He was a supporter and friend of Theodore Roosevelt by whom he was held in high esteem. His illness developed while he was attending the ceremony at Northampton at which Governor Coolidge was notified of his nomination to the vice-presidency. He was a firm supporter of the League of Nations.

CRETE. An island in the Mediterranean Sea under Turkish suzerainty, till May 31, 1913, when it was ceded to the Balkan Powers, which by the treaty of August 10, 1913, recognized its union with Greece. Area, 3327 square miles; population, 1911, 344,001; capital, Canea, with a population of 25,185. The language is Greek and the majority of the inhabitants belong to that race. The exports are mainly wheat, fruits, olive oil, wool, soap, cheese, carobs, and valonia.

CRICKET. The feature of the year 1920 was the tour of the United States and Canada made by the Incogniti Cricket Club of England. Nine games were played, the English experts winning seven and drawing two. The intercity matches between Toronto, Canada, and Philadelphia resulted in a victory for the Canadians by an innings and 160 runs. Middlesex captured the county championship of England.

The annual tournament of the New York and New Jersey Cricket Association was won by the Manor Field Club, Staten Island finishing second. The Manhattan Club triumphed in the matches conducted by the Metropolitan District Cricket League.

CRIMINOLOGY. See PENOLOGY.

CRITICISM, LITERARY. See LITERATURE, ENGLISH AND AMERICAN.

CROATIA AND SLAVONIA. Formerly a crownland of the Hungarian Kingdom in the Austro-Hungarian Empire; after the downfall of the Central Powers, a part of Jugo-Slavia. It extends from the Danube and Drave rivers westward to the Adriatic. The area is 16,421 square miles; population, estimated in 1913 at 2,668,589; later estimates place it at 2,621,954. Agram is the capital, with a population in 1910 of 79,038. Its former executive head was the Ban, who was responsible to the Hungarian Prime Minister and to the Provincial Diet, and the

legislative power was in the Diet, which was composed of 19 members who served five years. See JUGO-SLAVIA.

CROKER, Mrs. B. M. Anglo-Indian novelist, died in London, England, October 21. She was the wife of Lieut.-Col. John Croker with whom she had spent 14 years in India and the East. Among her publications may be mentioned *Pretty Miss Neville*, which was the first one to attract wide attention (1883); *A Bird of Passage*; *A Family Likeness*; *Mr. Jervis*; *Her Own People*; *The Company's Servant*; *Interference*; *Beyond the Pale*; and *Terence*. The last-named was dramatized in the United States. Later works include: *Katherine the Arrogant* (1910); *In Old Madras* (1913); *Lismoye* (1914); *Given in Marriage* (1916).

CROP PRODUCTION. See AGRICULTURE.

CROSBY, FREDERICK VAN S. Railway financier, died in New York City, December 2. For 22 years he had been treasurer of the Union Pacific Railway. He was born at Troy, N. Y., March 15, 1860. After courses in various schools and studies in Europe he was a special student at the Columbia College School of Mines. He entered the service of the Union Pacific Railway Sept. 1, 1898. He was prominent in social and philanthropic activities.

CROSS COUNTRY RUNNING. Fred Fallor of the Dorchester (Mass.) Club successfully defended his title as national senior cross country champion of the Amateur Athletic Union in a race held at Boston. William Ritola of the Finnish-American A. C. of New York City finished second. Fallor's time for the 5½ miles was 29 minutes 1 second. The point trophy went to the Dorchester Club with a total of 26. The Paulist A. C. of New York City was second with 29 and the Stoughton Catholic Club third with 80. Fallor added to his laurels by winning both the New England championship and the national 10-mile title event.

Cornell captured the intercollegiate cross country championship in a race held at New Haven over a 6-mile course. The winner was credited with 55 points, Princeton furnishing a close second with 56. Other scores were: Massachusetts Institute of Technology, 90; Penn State, 135; Yale, 148; Syracuse, 158; Williams, 208; Columbia, 217; Harvard, 220; Pennsylvania, 261; Dartmouth, 297. The individual winner was John L. Roenig, of Penn State College, whose time was 33 minutes 1 second. The intercollegiate freshman race was won by Yale with Princeton second and Penn State and Syracuse tied for third.

The American Marathon, 25 miles, held under the auspices of the Boston A. A., resulted in victory for Peter Trivoulidos of New York City. His time was 2 hours, 29 minutes, 31 seconds. A. V. Roth of the St. Alphonsus Club, Roxbury, Mass., finished second, and C. W. A. Linder of the Hurja A. C., Quincy, Mass., third. Hannes Kolchmainen captured the Marathon conducted by the New York Athletic Club. He covered the regulation distance, 26 miles, 385 yards, in 2 hours, 47 minutes, 49½ seconds. J. Orgon of Pittsburgh took second place, while J. Tuomikoski of Quincy finished third. Fred Zuna led the way in the Seagate Marathon, 25 miles. See OLYMPIC GAMES.

CROZIER, JOHN. Archbishop of Armagh. See ARMAGH.

CRUISER. See BATTLESHIPS AND OTHER WAR VESSELS.

CRUMPACKER, EDGAR. Congressman, died May 19. He was born in Laporte County, Indiana, May 27, 1851, and was admitted to the bar in 1876. From 1884 to 1888 he was prosecuting attorney and from 1891 to 1893 he was judge of the Appellate Court of Indiana. He was a member of Congress from 1897 to 1913; a Republican in politics.

CRYSTAL ANALYSIS. See PHYSICS.

CUBA. A Latin-American republic in the West Indies comprising besides the island of Cuba the Isle of Pines and the small adjacent islands. Capital, Havana.

AREA AND POPULATION. The area is 44,215 square miles and the population according to the enumeration of November, 1919, was 2,898,905, an increase of 261,369 over 1916; density, 65.34 per square mile. There are six provinces, namely, Havana, Oriente, Santa Clara, Pinar del Rio, Matanzas, and Camagney. The largest and most populous is Oriente and the next in population is Havana. The city of Havana has a population of 360,517; other large towns are Santiago de Cuba, 63,041; Camagney, 93,063; Guantanamo, 60,216; Cienfuegos, 82,092; Manzanillo, 62,485.

PRODUCTION. The staple products are sugar and tobacco. Coffee, cocoa, cereals and potatoes are raised and there is a considerable production of fruits and minerals. In 1918-19, the sugar crop amounted to 4,446,229 tons, valued at 457,305,858 pesos. The value of tobacco manufactured in 1918 was 33,829,627 pesos. At the beginning of 1919, the livestock was as follows: Cattle, 3,965,600; horses, 779,496; mules, 64,570. The mineral production for 1919 was as follows: Iron ore, 200,000 tons; copper, 70,000 tons; manganese, 18,000 tons; asphalt, 10,000 tons; oil, 8,000 barrels. There are particularly rich deposits of iron in the western part. The manganese mining industry has been developed in the Province of Santiago de Cuba, but there are manganese resources in other parts of the island.

The total number of immigrants in 1919 was 80,485, an increase of 43,165 over the preceding year. Nearly one-half of the immigrants were Spanish and next in number were those from Jamaica. The American immigrants in 1919 numbered 1227.

COMMERCE. By far the most important article of foreign trade, comprising in fact the greater part of the exports is crude sugar. The United States has stood first both in respect to imports and exports. During the fiscal year 1918-19 the imports from the United States had a total value of \$235,727,000, an increase of \$7,625,000 over the preceding fiscal year. The imports from Great Britain had decreased by \$3,159,000 in the same period. The exports to the United States in the fiscal year 1918-19 were \$350,316,000, an increase of \$71,612,000 over the preceding fiscal year. Cuban exports to Great Britain in 1918-19 showed an increase of more than \$20,000,000 over the preceding fiscal year.

The following table shows the exports and imports for the year ending Dec. 31, 1919, in comparison with the preceding year:

	Exports	1918	1919
United States		\$294,665,337	\$439,633,986
United Kingdom		95,149,549	82,521,328
France		5,656,957	23,041,878
Spain		6,776,676	8,243,968
Germany			10,425
Other countries of America		9,428,079	10,912,602
Other countries of Europe		495,154	6,636,254
All other countries		1,153,497	1,909,987
Total		\$418,325,249	\$572,910,378

<i>Imports</i>	<i>1918</i>	<i>1919</i>
United States	\$222,262,276	\$272,192,946
Spain	10,392,529	15,911,198
France	7,044,221	9,905,719
United Kingdom	9,154,567	8,746,505
Germany	2	197,499
Other countries of America	20,257,023	27,257,637
Other countries of Europe	2,362,336	3,059,989
All other countries	26,149,261	20,805,029
Total	\$297,622,215	\$357,576,522

COMMUNICATIONS. The railway mileage in 1919 was placed at 3200 and comprised the United Railways of Havana, the Cuban Railroad, the Cuban Central Railway, and the Western Railway of Havana. The chief towns and seaports are now connected by railway lines and there are private lines connecting the sugar estates with the main lines. For some time past the nationalization of the railways has been under consideration.

ECONOMIC CONDITION. Toward the end of the year the conditions were so serious in Cuba that the United States government considered the plan of sending an American representative for the purpose of investigating conditions in the island and reporting remedial measures. Two of the large banks of Cuba were insolvent. It was reported that the next sugar crop could not be harvested without financial assistance and in that case a sugar shortage would follow. The banks which had loaned money to producers when the price was comparatively low were heavily involved.

EDUCATION. On Nov. 30, 1919, the number of teachers was reported at 5877 and the pupils at 334,671. On April 5, 1920, the number of teachers was placed at 6151 divided as follows: Primary grade teachers, 5686; traveling teachers, 117; kindergarten teachers, 137; and the rest consisting of teachers of night schools, schools of manual training, and other special schools, and teachers unassigned.

FINANCE. In 1919, the national revenue was 79,078,325 pesos (peso equals \$1), which, compared with the 64,478,772 pesos collected in 1918, shows an increase of 4,599,553 pesos. The revenue was derived from the following sources in 1919: Customs, 44,337,713 pesos; contributions and taxes, 15,450,291 pesos; stamp tax, 3,605,775 pesos; loan tax, 4,561,009 pesos; national lottery, 4,429,921 pesos; sundry revenue, 1,673,858 pesos; communications revenue, 2,133,622 pesos; port improvement taxes, 1,599,318 pesos; property and State taxes, 408,732 pesos.

An executive decree of June 30th made the 1920-21 budget the same as the previous year.

GOVERNMENT. The executive authority is vested in a president and a cabinet consisting of secretaries of state for justice; war and marine; interior; defense; agriculture, commerce, and labor; public instruction; public works; and sanitation and charity. Legislative power is in the national Congress made up of a Senate of 24 members and a House of Representatives, of 114 members. The President in 1920 was Gen. Mario G. Menocal. He was inaugurated May 20, 1913. For presidential election, see below.

HISTORY. The presidential election was fixed for November 1st. The candidates were Dr. Alfredo Zayas who was nominated by a coalition of Conservatives and Liberals, and Gen. Miguel José Gomez, the choice of the Liberals. The Liberal candidate, Gen. José Miguel Gomez, celebrated for his military career in the Cuban revolution, had led in the rebellion against Palma

which caused the second intervention of the American government and had been President 1909-13. He was the leader in a brief uprising against President Menocal in February, 1917. The Liberal party had divided into two factions, respectively headed by Gomez and Zayas, and Gomez received the nomination. The supporters of Zayas united with the Conservatives who feared that Gomez would be too strong for them. In the election of November 1st Zayas was pronounced successful. The supporters of Gomez, however, charged fraud at the polls, intimidation of voters, and suppression of returns in many places, and claimed the election of Gomez. They petitioned the President of the United States to order an investigation in accordance with the proclamation that had been issued by him, August 30, calling upon Cuba to hold a valid election. In that proclamation it had been said that while the United States government would not interfere, it would observe the conduct of the election and the spirit in which the law was enforced. Liberal papers in Cuba repeated the charges of election frauds and other crimes, presenting long lists of the outrages at the polls. The United States State Department declared that it would not pass judgment unless all requirements of law in respect to filing complaints with the Cuban Electoral Board had been fulfilled.

Conditions were disturbed also by financial difficulties. The moratorium was proclaimed on October 10th in order to avert a panic in the sugar market. The difficulties resulting from this and from the political situation caused many Cubans to leave the country for the United States. Toward the close of the year the high prices were causing great anxiety. Sugar had risen to 24 cents a pound and the prices of ordinary articles may be illustrated by the fact that shoes were selling at \$28 a pair. Meanwhile, the moratorium had been extended from December 1st to January 1st and cash payments were required. The question of an American loan was being agitated and an American representative was appointed to investigate and report upon the situation and serve as a financial adviser.

At the end of the year the financial and political situation in the republic was still so critical that the United States government had under consideration the sending of a representative to investigate conditions for it seemed possible that intervention under the authority of the Platt amendment might be necessary. Under that amendment, which constituted Article Three of the Cuban and American treaty of July 2, 1904, the United States had twice intervened. The result of the November elections in Cuba had not been determined at the end of the year. The term of President Menocal was to expire on May 20, 1921. On the face of the election returns, Zayas was elected, but the vote was almost even and there was a sufficient number of missing votes to elect his opponent if they were in the latter's favor. There had been three general elections in Cuba since its liberation and two of these had been followed by revolutionary movements. The difficulties resulting from the moratorium were still serious. Many Americans had suffered under its terms and the State Department had received many complaints. At the close of the year it was announced that the moratorium in Cuba had been extended to Feb. 1, 1921.

The increasing volume of travel and business between Cuba and the United States led to the

establishment of an aerial mail and passenger service between Key West and the island, which began November 1st. See AERONAUTICS.

CUBA. See AGRICULTURAL EXPERIMENT STATIONS.

CULBERTSON, SASCHA. See MUSIC, Artists, Instrumentalists.

CULME-SEYMOUR, Sir MICHAEL. Admiral in the British navy, died at Oundle, England, October 11. He was born at North Church, England, in 1836; educated at Harrow, and entered the navy in 1850. He served in the war with Burma, 1852, in the Baltic, 1864; the Black Sea, 1854-55; the China war, 1858; and was made rear-admiral in 1882. In 1885-87, he was in command of the Pacific squadron, being at that time vice-admiral. Later he was in command of the Channel and Mediterranean squadrons and in 1897-1900 he was commander-in-chief at Portsmouth. As chief naval aide-de-camp, he was conspicuous in the ceremonies connected with the funeral of Queen Victoria.

CUMBERLAND PRESBYTERIAN CHURCH. This denomination was founded in 1810 as a separate presbytery of the Presbyterian Church. The fact that the strength of the church was in the border States, caused much discussion during the Civil War, and the denomination was barely saved from disunion. The question of negro churches resulted in the mutual agreement for the establishment of the Colored Cumberland Presbyterian Church, as affording to the negroes the opportunities they needed most for church development. In 1904 the General Assembly effected a union with the Presbyterian Church in the United States of America, but strong opposition in the Cumberland Presbyterian Church resulted in the formation of a new General Assembly and a legal fight to obtain possession of the church property with varying results.

The 90th meeting of the General Assembly was held at McKenzie, Tenn., on May 20-26, 1920. The 91st meeting will be held about the same date in 1921 at Greenfield, Mo. Reports show that in 1920 there were 1388 congregations with a total of 64,452 members, a decrease since 1916, although not on so large a ratio as between 1906 and 1916. Church property was valued at \$2,022,009. There were a total of 752 ministers. There were about 750 Sunday Schools, with about 5000 officers and teachers. Pupils in 1920 numbered 34,806, a marked decrease from 1916. Young People's Societies numbered 3821. Reports show that the missionary work carried on in this country, and especially among the Indians, is progressing satisfactorily, although hampered by a lack of funds. Missionary work is also being carried on in China, where four churches are maintained with about 600 members. The educational interests of the denomination are represented by the Cumberland College, at Leonard, Texas, and the Cumberland Presbyterian Theological Seminary at McKenzie, Tenn. *The Cumberland Presbyterian*, is published in Nashville, Tenn., and the *Cumberland Banner* is published in Tullahoma, Tenn.

The Cumberland Presbyterian Church (Colored) had, according to the latest available statistics (1916) 136 organizations, 13,077 members, and 132 church edifices. Church property was valued at \$230,426. There were 139 Sunday Schools, with 928 officers and teachers, and 7471 pupils. One school with 250 pupils is main-

tained, and missionary work is carried on in eight States. No foreign missionary work is conducted. Total contributions for missionary and benevolent work in 1916 was \$11,995. *The Colored Cumberland*, a semi-monthly periodical, is published in Milan, Tenn.

CUNLIFFE, WALTER (LORD CUNLIFFE). Governor of the Bank of England from 1913 to 1918, died at Epsom, England, January 6. He was born in 1855, educated at Harrow and at Trinity College, Cambridge, and went into business in London in 1880. Ten years later he established a mercantile banking business and in 1895 became a director in the Bank of England where he was appointed governor in 1913. During the war he was blamed somewhat for the delay in the taking of measures for the improvement of the American exchange in 1915 and for maintaining his increase of the banking rate in July, 1916, beyond the necessary time. He was raised to the peerage in December, 1914. He was known in the United States chiefly as a member of the financial mission of Mr. Balfour in 1917. His term as governor of the Bank of England was longer than that of any of his predecessors, no one before him having served for more than three years.

CUNNINGHAM, Sir HENRY STEWART. British jurist and Indian official, died in London in September. He was born at Harrow in 1832 and educated there and at Oxford where he won the prize for an English essay and he was called to the bar in 1859. In 1866 he became government advocate and legal adviser in the Punjab, India; in 1872 government advocate at Madras. From 1877 to 1887 he was judge of the High Court of Bengal and he returned to England in 1887. He was well known to the general public by his novels on Anglo-Indian subjects, especially for the *Chronicles of Sir Dustypore* (1873) which gained a high place among contemporary Anglo-Indian writings. In 1891 he wrote a volume on Lord Canning in the series of *Rulers of India*; in 1894 a novel entitled *Sybil*; and in 1896 an admirable biography of Lord Bowen.

CURACAO. A colony of the Dutch West Indies with an area of 436 square miles and a population (Dec. 31, 1918) of 57,619 of which 34,639 were on the island of Curacao itself. The colony comprises the islands of Curacao, Bonaire, and Aruba in one group and the islands of St. Martin, St. Eustache, and Saba in another, which is situated about 500 miles to the northeast near the coast of Porto Rico. Part of the island of St. Martin belongs to France. The island of Curacao has one of the best harbors in the West Indies. It produces and exports aloes, divi-divi, and sisal, and it raises for home consumption fruit, corn, vegetables, and herds of goats and sheep. Its chief interest is commerce. The total imports in 1919 were \$2,826,657 of which \$1,744,997 were from the United States. The imports in 1918 were valued at 7,307,823 guilders and the exports at 2,685,828 guilders. The ports of the various islands in 1918 showed an entrance of 3345 vessels of 997,100 tons net. In the 1920 budget revenue was estimated at 1,067,674 guilders and expenditure at 1,647,427 guilders. The government consists of a governor assisted by a council which comprises a vice-president and three members nominated by the crown.

CUREL, FRANÇOIS de. See FRENCH LITERATURE.

CURRENCY. See BANKS AND BANKING; COINS, VALUE OF FOREIGN; FINANCIAL REVIEW; UNITED STATES.

CURTIS, H(ENRY) HOLBROOK. Specialist in throat diseases, died in New York City, May 14. For many years he was one of the leading specialists in that department. He was born in New York City, Dec. 15, 1856, graduated at Yale in 1877, and graduated in medicine in 1880. He was consulting laryngologist at various hospitals and a member of many prominent associations in this country and abroad in the field of laryngology and otology. In 1894 he published a volume entitled, *Voice-Building and Tone-Placing*. He was especially known among actors, singers, and people of other professions that required the use of the voice in public.

CURTIS, M. B. Actor, died at Los Angeles, Cal., December 29. He made a great success in the comedy known as *Samuel of Posen*, which at one time played throughout the entire country, and whose vogue lasted for several years. Twenty-five years before his death, he was arrested on the charge of killing a policeman, and the costs of the trial, which resulted in acquittal, exhausted most of the money that he had earned as an actor. His death occurred at the county hospital.

CYCLING. Both amateur and professional bicycling gained in popular favor during 1920. Arthur Spencer, a Canadian, captured the national sprint championship of the United States, while Robert Spears of Australia was crowned world's sprint champion.

Three six-day races were held in New York City, the first held at Madison Square Garden was won by Alfred Gouillet and Jake Magin. The second contested at the 22d regiment armory was termed an "outlaw" affair in as much as the National Cycling Association refused to sanction it. Many of the leading riders competed nevertheless in defiance of the Association. The winners were Harry Kaiser and Ray Eaton.

The third contest held at Madison Square Garden attracted a field of new cyclists and drew the largest crowds on record. This race was won by Maurice Brocco of Italy and Willie Coburn of Newark, N. J., who stole two laps on the field in the first 24 hours. The national amateur title went to Fred Taylor of the New York A. C.

CZECHO-SLOVAKIA. A republic formed out of Slav regions previously within the limits of the Austro-Hungarian Empire: independence proclaimed Oct. 21, 1918; government organized at Prague, Oct. 28, 1918; formally declared a republic by the National Assembly at Prague, Nov. 14, 1918. See below under *Government and History*.

AREA, POPULATION, ETC. The area has been estimated at 52,000 square miles and the population according to the census of Dec. 31, 1910, was 13,914,336. It comprises Bohemia, with an area of 20,065 and population of 6,769,548; Moravia, 8584, and 2,622,271; Silesia, 1988 and 756,949; Slovakia and Ruthenia, 25,309 and 3,654,435; and the German and Austrian districts assigned by the Peace Conference, 370 and 113,133. At the census of November, 1919, the population of Slovakia was 2,940,374 of whom 2,141,000 were Slovaks, 665,000 Magyars, and 140,322 Germans. The cities over 40,000 with their estimated population on June 30, 1914, are as follows: Prague and environs, 550,000; Brno, 135,-

000; Plzen, 85,000; Pressburg, 85,000; Kosice, 48,000; Ostrava, 42,000; Liberec, 40,000; Usti, 40,000; Bude Jovice, 40,000. The majority are Catholics, but no later figures can be given than those in the preceding issues of the YEAR BOOK under the title of AUSTRIA-HUNGARY, according to which the Roman Catholics numbered 11,836,933; the Greek Catholics, 592,115; and the Protestants 976,567. Educational figures were incomplete, except for the period before the war. Elementary instruction is compulsory between the ages of 6 to 14. Before the war there were 13,638 elementary schools with 2,032,313 pupils and 1021 advanced public schools with 172,607 pupils. Slovakia in 1918-19 had 3931 elementary schools with 390,764 pupils. There were 216 gymnasia and other schools for secondary education. There are four universities, two of which are at Prague, the other two being respectively at Brno and Pressburg. One of the universities at Prague is Czech (teaching staff 116; students 7051), and the other is German (teaching staff 113; students 3043). The university at Brna (Czech) had 15 teachers and 490 students and the university at Pressburg (Slovak) had nine teachers and 124 students. At Prague and also at Brno there are two technical high schools, respectively Czech and German.

PRODUCTION. The territory in respect to natural resources is one of the richest in Europe and is far advanced in industrial development. Of the total population the largest element is engaged in the industries and next to that in agriculture. The average annual harvest has been valued at 1,250,000,000 kronen. There is a very large fruit export. Stock-raising flourishes, and there are well developed industries connected with agriculture, such as sugar-refining and the beer and spirit industries. The minerals include gold, silver, copper, iron, coal, antimony, etc. The factories in 1919 numbered 8833 of which 2000 were engaged in the manufacture of textiles; 1755 glass and precious stones; 1355 food manufacture. See AGRICULTURE.

FINANCE. In 1920 the budget estimates were: Revenue, 5,323,582,000 kronen, ordinary, and 2,427,188,000 extraordinary, making a total of 7,750,770,000; expenditures, 4,926,691,000 ordinary, and 5,489,484,000 extraordinary, making a total of 10,416,175,000. The finance minister on Oct. 25, 1920, submitted to the National Assembly a bill containing a statement of probable revenue and expenditure and of financial proposals for the fiscal year commencing Jan. 2, 1921. While the appropriations are for the third year of the Republic's existence, an even balance in current government receipts and disbursements has already been achieved, the first amounting to 14,107,979,550 and the latter to 14,104,374,650 crowns (Czecho-Slovak crown = \$0.202 at par of exchange; the present exchange value is about \$0.0125).

RAILWAYS. In 1919 the railway mileage was 8680 of which 7850 was state railways. The following information was supplied by the United States Bureau of Foreign and Domestic Commerce: The Bohemian, Moravian, and Silesian net of railways was constructed as an integral part of the railways of old Austria at a time when, for political reasons, all the trade was directed to the centre of the Empire, Vienna—that is, from north to south. The rigid centralistic Austrian system did not allow any devia-

tion with regard to the main traffic routes. It was also a policy of the Austrian and Hungarian governments to separate Slovakia from its kindred countries, Bohemia and Moravia, and firmly to bind it by a net of railways to the centre of Hungary. The old government, therefore, constructed railway lines extending to Budapest, from north to south, and only here and there were tracks built in a different way, but without any connection between them, the only aim being to increase the traffic toward the Magyar centre. Under the empire the railroads in Bohemia, Moravia, and Silesia were systematically neglected and during the war very poorly maintained, so that in 1920 they were in a very bad condition. Moreover, the railways in Slovakia had many lines of local railways with a weak superstructure, which did not allow their use for all the rolling stock and especially locomotives, whereby the entire traffic was very much hampered. In the Czecho-Slovak Republic there was a change in regard to the direction of our commercial policy, i.e., in favor of a west-to-east direction. It was therefore an important task to prepare the net of railways in such a way as to accomplish the connection of Moravia with the north, the centre, and the south of Slovakia, and to construct in Slovakia itself a transverse main line to Rusinia (Podkarpatska Rus), to which it would be possible to join a further net of railways.

GOVERNMENT. After the National Assembly declared the new state to be a republic with Prof. Thomas G. Masaryk as its first president (Nov. 14, 1918), it proceeded to the work of forming a constitution and preparing for a general election. The constitution was adopted Feb. 29, 1920, and the general election was fixed for April, 1920. Under the constitution the new state is a democratic republic with an elected president, the territory under it forming a single unit. The president is the commander-in-chief of the armed forces, has the power of appointment for the higher officials and acts through a responsible ministry. He is elected by the national parliament for seven years. The legislative power is vested in the national parliament which consists of a chamber of deputies of 300 members elected for six years and the senate of 150 members, renewed every eight years. Freedom of speech and of the press, the protection of racial minorities, etc., are guaranteed by the constitution. There is universal adult suffrage without distinction of sex and all citizens over the age of 30 are eligible for office. The official language is Czecho-Slovak, but it is provided that a minority in any district numbering over 20 per cent of the population may choose its own official language and have its own schools. The principle of proportional representation is observed. The president in 1920 was Professor T. G. Masaryk. At the beginning of 1920 the ministry, constituted July 8, 1919, under Tusar (Social Democrat), as Prime Minister, was in power.

HISTORY

ELECTIONS. The National Constituent Assembly had completed its work and dissolved April 15. On April 18 the elections were held for the chamber of deputies and on April 26 for the senate. The votes by nationalities were as follows: Czechs, 4,203,480, electing 199

deputies; Germans, 1,576,692, electing 72 deputies; Magyars, 274,630, electing 10 deputies. The distribution of seats among the political groups of the respective nationalities was as follows: (1) Czechs: Social Democrats, 74; Clericals or Peoples Party, 33; Agrarians, 28; Czecho-Socialists, 24; National Democrats, 19; Peasants, 12; Traders Party, 6; Progressive Socialists, 3. (2) German: Social Democrats, 31; German Electors' Union, 15; Farmers' Union, 11; German Christian Socialists, 10; German Liberals, 5. (3) Magyars: Magyar Christian Socialists, 5; Magyar Social Democrats, 4; Agrarians, 1. Dr. Masaryk was chosen president by a vote of 284 to 61 upon the meeting of the new parliament. The Tusar ministry had resigned after the close of the National Constituent Assembly and a new ministry was now appointed. M. Tusar was again named as prime minister. This ministry resigned, September 15.

NEW MINISTRY. The new ministry was composed as follows: Premier and Minister of Interior, Jan Cerny, head of the provincial government of Moravia; Minister of Defense, General Husak; Minister of Posts, Dr. Fodka; Minister of Agriculture, Dr. Brdlik; Minister of Railroads, Dr. Burger; Minister of Public Welfare, Dr. Gruber; Minister of Unification, Dr. Fajnor; Minister of Food, Mr. Prusa; Minister of Public Health, Dr. Prohaska; Minister of Foreign Affairs, Dr. Benes; Minister of Finance, Dr. Englis; Minister of Education, Dr. Susta; Minister of Justice, Dr. Popelka; Minister of Commerce, Mr. Hotosek.

The fall of the Tusar ministry was followed by a division in the ranks of the Social Democrats, a portion of whom, comprising the leaders of the party, refused to accept the programme of the Third International, saying that the principles of social democracy and those of Communism as understood in Moscow were so sharply contrasted that it was useless to try to reconcile them. Thereupon, the radical element in the party withdrew and at the same time took possession of the party newspaper. The Conservative element, however, opened a separate office for the newspaper, which thereafter was published in two separate editions, representing the respective Right and Left wings of the party. The new prime minister was a member of the National Democratic party and his ministry was regarded as a non-political government, consisting of administrative experts.

FOREIGN RELATIONS. The prime minister, Czerny, toward the close of the year condemned the agitation in Hungary on behalf of the Hungarian element in Czecho-Slovakia if the reports in the press were correct. He declared that if good relations did not exist between the two countries, it was not the fault of his own and that he would energetically ward off any attacks upon the integrity of Czecho-Slovakia. The press reports to which he referred indicated a well organized irredentist movement in the Hungarian portions of the new state. The foreign ministry declared that the press reports had been fully established. Serious disturbances were reported in the old kingdom of Bohemia in the middle of November where riots broke out as a result of Pan-German demonstrations. In Prague, there were anti-Czech demonstrations on the part of the Germans. This provoked attacks by the Czechs and mobs destroyed a considerable amount of German property. There were anti-

Semitic riots in the German university of Brönn. The foreign ministry in November announced that the Russian Soviet government had offered a secret military and political alliance and that it had been refused.

SOCIAL DEMOCRATS. Toward the close of the year the Social Democratic party in conference declared that it would coöperate in the work of parliament and submit measures of a Social Democratic character, but would decline to take part in any coalition of parliamentary groups. In foreign relations it demanded a policy of peace and friendship with all neighboring countries: strict neutrality as between Poland and Russia: and resumption of diplomatic relations with the Soviet government.

DADAISM. See FRENCH LITERATURE.

DAHOMÉY. A French colony of West Africa between Togoland on the west and the British possessions of Lagos and Nigeria on the east and with the French military territories on the north. It is part of the government-general of French West Africa (q.v.). There are only about 70 miles of coast land. The population in 1918 was estimated at 900,000 including 480 Europeans. The natives are of pure negro blood and belong to the Ewe family. They are for the most part fetish worshippers, but are industrious farm workers along the coast where they grow corn, yams, potatoes and manioc. The capital and chief business centre is Porto Novo with about 20,000 inhabitants. The other towns of importance are: Abomey (12,372); Whydah or Ouida (13,000); Grand Popo (2115); Kotonou (2456). The chief imports are cotton, machinery, tobacco, and liquors; the chief exports, corn, palm kernels and palm oil. In the central part cotton cultivation is successfully carried on. In 1914 the exports of palm kernels amounted to 12,189,239 francs and the exports of palm oil to 13,690,478 francs. There is a railway from Kotonou into the interior as far as Savi, a distance of 156 miles, which has a branch line to Whydah, and its prolongation to Chaoru, a distance of 400 miles, is projected. There are 1389 miles of telegraph. The budget for 1919 was given at 5,921,000 francs.

The foreign trade showed a marked advance in 1919, the total being \$22,096,114, as against \$11,258,413, in the year before. The exports amounted to \$13,530,170 and the imports to \$8,566,244. The chief imports in respect to value were cotton goods, and tobacco; and the chief exports, corn, palm kernels, and palm oil. In percentage of the total value of foreign trade distributed among the leading nations in 1919 was as follows: Great Britain, 30 per cent; France, 29.6 per cent, and the United States, 12.5 per cent. The shipping figures for the port of Dahomey in 1919 were as follows: Tonnage entered, 259,887; cleared, 277,003.

DAIRYING. PRODUCTION AND PRICES. For the first nine months of the year, production and price of dairy products continued about the same as during 1919. Although exports had decreased and imports were coming in greater quantities, the actual effect of this situation was not felt until about October of 1920. Prices for butter and condensed milk remained about the same as the year before, while cheese was inactive during considerable part of the year.

The following table gives the production of butter, cheese, and condensed milk for the fiscal years 1919 and 1920. Cheese production re-

mained about the same, while butter decreased and condensed milk increased.

	1919 (pounds)	1920 (pounds)
Creamery butter	852,312,500	744,262,058
American cheese	272,791,283	270,898,862
Condensed and evapor. milk	1,871,658,452	2,244,392,769

On the first of October, the combined effect of several factors greatly upset the whole industry and marked decreases in the prices of butter and condensed milk soon followed. Several factors contributed to this adverse condition.

During 1919 an enormous export trade in butter and condensed milk had been built up. More butter and more condensed milk were imported, by far, than at any time in the history of the country. During this year, however, foreign credits expired and the adverse exchange situation discouraged our export trade and encouraged imports. With butter, for instance, the greatest export year, 1919, was followed by the greatest year of imports, while condensed milk dropped from the high point of 114 million pounds in the month of June last year, to 17 million pounds in November of 1920. Production in the latter product had continued at the normal rate, and the enormous accumulation was responsible for the closing down of many of the condensaries on October 1st. Some of the plants continued to operate, but all milk was received on account of the producers who were obliged to deliver their milk to the factories and accept the returns for the product in whatever form it was manufactured, less the actual cost of manufacture. Some of the milk formerly used for condensed milk was converted into cheese, while a larger amount of it was made into butter and, in many cases, the skim milk was not utilized.

Milk powder plants were similarly affected because of the surplus of that product and this contributed its share of discouragement to the producer. A very large drop in the price of sugar about this time was also a serious factor in the condensed milk business. In some sections, notably in the Eastern and New England States, the milk producers' organizations are attempting to contract for all of the milk of producers and form a pool, so that the producer will receive a similar price whether the milk goes to the cities for direct consumption or whether it is made into various products.

The producers' price for milk for direct consumption to the cities did not react so quickly to the decreases in price, although it is already considerably lower than the cost in the winter months of last year. The price of retail milk in the cities has not increased for the winter months as it usually does, and in some cases has decreased one to three cents a quart. It is fortunate that with this material decrease in price of milk there has also been a decrease in the price of feeds for dairy animals. Both hays and concentrated feeds have decreased 30 to 50 per cent, and in some cases more, below the prevailing prices of a year ago.

FOREIGN TRADE IN DAIRY PRODUCTS. The production of dairy products in this country is enormous, but normally it is all consumed at home. During the war, however, production was stimulated by the increased prices and the outlet to foreign countries. The outlet, although comparatively small, except in the case of condensed milk, as compared with total production, had

a stabilizing effect upon the price. As has been pointed out, during the past year this outlet was stopped and imports increased. Although the actual quantity imported was small compared with our total production, yet it has had a serious effect upon the situation, because instead of foreign trade being a stimulus to the price, importations have seriously upset the markets. During 1920 more butter was imported into the United States than at any time in the history of the country, reaching as high as over eight million pounds in the month of July.

The following table shows the foreign trade in dairy products for the fiscal years 1919 and 1920.

	Imports	Exports
Butter:		
1919 (fiscal year)	4,131,469	33,740,360
1920 " "	20,770,959	27,129,834
Cheese:		
1919 (fiscal year)	2,437,871	18,794,455
1920 " "	17,913,682	19,427,300
Condensed and evaporated milk:		
1919 (fiscal year)	20,183,623	730,119,710
1920 " "	19,080,642	707,847,328

The reversal in trade has been brought about, largely by the decreased buying of the United Kingdom, France, and Belgium. The chief buyers at the present time of condensed and evaporated milk are Germany, Cuba, Belgium, and the United Kingdom, and because of the inability of Germany to buy much butter from Denmark, and because of the great decrease in consumption of butter in England, considerable quantities of the butter that is being imported into this country now comes from Denmark, although there have been considerable quantities from Canada, Argentina, and New Zealand.

TARIFF. Since the reverse in trade in dairy products, there has been much agitation among the various dairy organizations in this country to have the tariff revised. Before 1914, the tariff on dairy products largely prohibited importations except for some condensed milk and some special foreign varieties of cheese. In that year, however, the tariff was reduced and large importations came, but the war having started in August of that year destroyed the effect of the low tariff. The tariff on butter was reduced from six cents a pound to two and a half cents; cheese from six cents a pound to 20 per cent ad valorem; while condensed milk was changed from two cents a pound to the free list.

EXPERIMENTAL WORK. Progress has been made during the year in problems relating to the feeding of dairy cows. Considerable additional information has been made available by studies in the mineral requirements for milk production. It has been demonstrated that the lack of sufficient calcium and phosphorous are often limiting factors in the amount of milk that is produced. It has been shown that the subsequent production of a cow can be largely increased by liberal feeding over a comparatively long period before calving, or by feeding of mineral salts during a shorter period before freshening, and that this is especially true of cows not heavily fed during the lactation period. Progress has also been made in the studies of various proteins commonly fed to dairy animals. Much greater usefulness of some forms has been demonstrated.

The large breeding project which is being conducted by the Federal government in co-

operation with many of the States has been enlarged, and during the year the studies of the principle of inbreeding, as compared with outcrossing, have been added to the problems for investigation.

The work on products during the year has been increased along the lines of studies in the quality of milk for the manufacture of products. It has been demonstrated that the quality of the milk is of greatest importance in the manufacture of certain varieties of cheese and condensed milk.

It has been especially observed that there are special forms of organisms that produce rennet and that their by-product may be a larger factor than the acid forms, especially in connection with the coagulation of milk for the making of evaporated products.

The utilization of milk in the form of various by-products has continued, and a process for making albumen powder from whey has been devised. The manufacturing work with butter and cheese has had considerable attention by the various States and the Federal government, and these studies have largely been along lines of management and plant efficiency, while causes and prevention of mold in butter have received additional attention.

MILK CONSUMPTION. The city campaigns that were so successful last year in increasing the consumption of milk in the cities during the past year have been extended to the country, for it was found that in some sections, especially in the South, a large percentage of the farm families had no milk. An out-growth of the campaign in the South was the slogan, "At least one cow on every farm." The result of this campaign has been very marked and in some counties hundreds of dairy cattle have been brought in and distributed among small farms. The campaigns for increased consumption have been conducted by the various States and cities, and have usually been cooperated in by the women's organizations, public health committees, and others directly interested in child welfare work, especially. The National Dairy Council, an organization for spreading the gospel of milk consumption, has been considerably enlarged during the year, and increased numbers of specialists have been employed for the purpose of carrying on campaigns and for the distribution of information along the lines of consumption of dairy products. Some 10 or 12 State organizations have been formed and many of them affiliated with the national organization.

Reports from cities indicate that the consumption of milk has increased considerably during the past year.

PUBLICATIONS. The following are among the books on dairying that have been published during the year:

Heinemann, Paul Gustav. *Milk*. Philadelphia, W. B. Saunders Company, 1919.

King, Clyde L. *The Price of Milk*. Philadelphia, John C. Winston Company, 1920.

Hunziker, Otto Fred. *The Butter Industry*. Published by the author, LaGrange, Ill., 1920.

Hunziker, Otto Fred. *Condensed Milk and Milk Powder*. 3d edition. Published by the author, LaGrange, Ill., 1920.

DALMATIA. Before the downfall of the Austro-Hungarian monarchy, a crownland of Austria; after the revolution of November, 1918, a constituent part of the new state of Yugoslavia. It is bounded by Bosnia and Her-

zegovina on the east and the Adriatic Sea on the west and it lies between Croatia and Montenegro. Area, 4952 square miles; population on Dec. 31, 1910, 645,666. Its population in the new state of Jugo-Slavia was given at 945,666, but certain of its territories were in dispute with Italy. (See WAR OF THE NATIONS). While it was a part of the Austro-Hungarian area, the Croat-speaking element was placed at the census of 1910 at 610,669 and the Catholics numbered 539,074 as against 105,338 Orthodox Greeks. Capital, Zara, with a population of about 14,000. Other important towns: Spalato (about 21,000); Ragusa (about 9000); and Cattaro (about 3000); all of which are seaports.

DALTON, Sir CORNELIUS. British patent office official, died in London, England, in October. He was born March, 1842, and was educated at Trinity college, Cambridge, where he took honors. He studied law and entered the civil service in 1873 and was a member of important commissions on taxation, etc. From 1897-1900 he was Controller-General of Patents. Among his publications may be mentioned: *The Real Captain Kidd* (1911), and *The Life of Thomas Pitt* (1915).

DAMS. A review of engineering literature in 1920 would probably reveal that more attention was being paid to earth fill dams than those of other types. This followed from the fact that for most of the project this form of construction was most suitable, yet obviously where there are gorges or narrow river beds the masonry dam must be employed with ingenious and well organized methods for depositing the concrete.

MIAMI CONSERVANCY DAMS. The important work of the Miami Conservancy District (See FLOOD PROTECTION) involved the construction of five dams formed by earthen embankments pierced by outlets of concrete masonry. These dams varied in volume from 865,000 cubic yards to 3,500,000 cubic yards, and aggregate some 9,000,000 cubic yards of fill. They were all being built by the hydraulic method and not only did the work rank as the largest hydraulic fill dam construction ever undertaken, but in its prosecution mechanical and technical advances beyond anything ever recorded in this field were attained. In most of the construction, in all except the dam at Germantown, the dams consisted of wide, flat fills across broad level valleys. The work was most carefully organized and its prosecution involved the essential elements of stream control. Borrow-pit development and materials transportation, pump construction and operation, discharge pipe construction, and embankment building. In the construction of the dams at Taylorsville, Huffman and Lockington where the outlets were concrete notches in the embankments, by leaving out the wire crossing the notch a flume was obtained adequate to pass the floods during the construction. The dams at Englewood and Germantown were continuous embankments across the valleys and the outlets were twin conduits passing through the bottom of the fill. During the construction period these were enlarged to about twice their final capacity. The Germantown dam, the first of the five dams to be completed was finished during the year, and in 1921 would be ready to act by exerting its full detention in place of the enlarged conduits just referred to used for flood water in 1920. The Germantown dam is 110 feet high, containing about 900,000 cubic yards of embankment.

BRIDGEWATER PROJECT. In the autumn of 1919 the new Bridgewater reservoir of the Western Carolina Power Co., to impound the waters of the Catawba River and its tributaries was practically completed. This as described in the YEAR BOOK for 1917 (See DAMS, page 187), involved three dams known respectively as the Catawba, Paddy Creek, and Linville dams. The Catawba for its section crossing the river was of the gravel concrete type, but the remaining section as well as the other two dams were earth fills formed by hydraulic sluicing of earth brought up in trains and deposited along the outer edges of the dam from timber trestles. These three earth fill dams were of approximately the same design, with a top 20 feet wide, upstream slopes of one on three and downstream slopes of one on two and one half. There was a central bottom trench and a downstream low rockfill toe wall. The Catawba dam was 120 feet high and contains about 1,820,000 cubic yards. Paddy Creek dam had 160 feet maximum height with 1,450,000 cubic yards, and Linville was 160 feet high with 1,250,000 cubic yards total fill. The different dams were located within 2½ miles of each other and the material used in building them was of essentially the same nature and composition.

At the Catawba dam there is a spillway of masonry 305 feet long across the river bed and the earthfill, this spillway rising to a height of 125 feet. This spillway through its extensions is tied into the earthfill, there being a concrete core wall with seven fins. The top is crossed by a public highway with two 153 feet long steel spans supported by a central pier, making a bridge over the spillway. The entire project is fully discussed in the *Engineering News-Record*, vol. 84, No. 28, p. 1088, and vol. 85, No. 7, p. 306.

BIG EDDY DAM. The Big Eddy dam across the Spanish River near High Falls, Ont., was completed during the year and provided a regulating reservoir for a power plant of the International Nickel Co., located about ¾ of a mile downstream. The structure was of mass concrete section with a maximum height of 159 feet and a length of 1100 feet, 512 feet of which was in comparatively low bulkhead. There was a penstock section, 152 feet in length and the remainder was spillway. The site of the dam is at a narrow gorge of the river which was closed by sinking four pneumatic caissons, two upstream and two downstream. To take care of the river discharge a flume was excavated through a slight depression behind the east bank of the river involving the removal of 14,000 cubic yards of rock which later was used in the concrete structure of the dam proper. As the dam grew in height the flume was roofed over at a height of 42 feet above the floor.

DEVILS GATE DAM. The Devils Gate concrete arch dam, near Pasadena, California, was dedicated on Aug. 18, 1920. This was one of the structures built by the Los Angeles County Flood Control District, and was located in the deep gorge of the Arroyo Seco. It has a maximum height of 120 feet above bed rock and is about 310 feet in length on the crest. It is of the single arch type and carries across its crest a highway. It is a concrete structure comprising some 30,000 cubic yards of concrete, which was mixed and placed at the very good rate of 300 cubic yards per 8-hour shift. About 75 per cent of the total amount was poured from the

mixer directly into the dam, and the material to mix with the cement was found near the dam site.

WANAQUE DAM. The North Jersey District Water Supply Commission on Nov. 9, 1920, let a contract for the construction of a portion of the Wanaque Dam. This was to be an earth dam whose construction would create an impounding reservoir of 11,000,000,000 gallons capacity on the Wanaque River. The plans involved a concrete and puddle core wall, 970 feet long, excavated from the ground surface to bed rock by means of a sheeted trench 100 feet or more in depth. The contract referred to called for the construction of the concrete and clay puddle core-wall from bed rock to the surface of the ground, excavation of a channel in rock, removal of existing mill buildings, and erection of miscellaneous structures. The work contemplated 83,500 cubic yards of earth excavation, 16,000 cubic yards of rock excavation, 8000 cubic yards of clay puddle, 28,500 cubic yards of concrete, and 100 tons of sheetpiling. The letting of the contract was interesting in view of industrial conditions during the year as the work was to be done on a cost-plus-a-percentage basis, the contractor to share in any reduction in unit costs up to a certain per cent, or to bear a share of added expense through an increase in cost of materials and wages. It was provided, however, that no matter what the expense of the work might be, the contractor was assured of a 4 per cent fee. In this connection a straight unit price bid was tendered by a responsible contractor which was under the engineers' estimates, but this was rejected by the commission in view of a probable fall in the costs of materials and labor, which would make the cost plus plan advantageous.

SPAULDING DAM. An interesting project described in the *Engineering Press* of 1920, though completed in the previous year, was the raising by an addition of 15 feet in height and backing up to secure increased strength, of the Lake Spaulding Dam of the Pacific Gas and Electric Co., of California. This lake is situated in Nevada County, being formed by impounding the water of the South Fork of the Yuba River. The main dam which since the addition rises to a height of 275 feet above the river bed is flanked by five smaller dams and a storage of 74,000 acre feet is provided. The original dam built in 1913 and described in the *YEAR BOOK* for that year (page 199), was designed for a height of 305 feet, and was first built up to a height of 225 feet with foundation adequate for the ultimate completion. In 1916 the dam was raised to 260 feet, and the 1920 addition of 15 feet probably represented the final work as further storage could be secured more economically elsewhere in the water shed.

The addition made in 1920 involved the continuing of the upstream and downstream bottles which were three feet and 16 feet in 100 feet respectively. The crest was 11 feet in width. The improvement also involved the reinforcement of the downstream face of the arch section. The undertaking presented unusual problems dealing with the shrinkage of concrete and adaptation of new to old construction. Dam 2 in the project is the spillway dam with a spill crest five feet deep and 270 feet long with six-inch I-beam posts at six foot centres to support wooden flash boards and a walkway. This dam which was arched

with a radius of 300 feet was made by backing up the old section. Dams 3, 4, and 5 were raised and connected so as to form a continuous dam, reinforcing by buttresses and other backing being introduced. The water stored at this dam is passed through a series of four power houses with an aggregate head of 2430 feet and then is used for irrigation purposes. The project outlined is described in *Engineering News-Record*, vol. 85, No. 22, page 1020.

KERKHOFF DAM. This concrete dam across the San Joaquin Valley, California, completed at the beginning of the year was marked by a notable system of construction. It was built of concrete from a superposed trestle which was erected complete before starting construction work, and its frame work not only served for the tracks of the cars from which the concrete was chuted down to the dam construction, but also as a backing for the concrete forms. The dam was 108 feet high with a radius of 205 feet in the upstream face.

WARM SPRINGS DAM. A similar method of construction was used successfully on the Warm Springs Dam, a thin arch dam on the Malheur River, in Eastern Oregon, built to impound 170,000 acre-feet of water for irrigation. This dam was 549 feet in length at the top, 469 feet along the curved portion, and 200 feet at the bottom. The width at the top was eight feet and at the bottom 27.24 feet. There was a spillway 324 in length with a free board of 8 feet.

PROPOSED MERCED RIVER DAM. An interesting project of the year was included in a report on the requirements of the Merced irrigation district in the San Joaquin valley of California. The district contemplates the irrigation of 200,000 acres of fertile land, of which 52,000 acres was already irrigated. The report recommended a storage reservoir on the Merced River formed by a dam at Exchequer, 7 miles above Merced Falls, where a simple arch dam of perhaps 330 feet total height, could be constructed which would raise the water 300 feet and form a reservoir 12 miles long. Such a flooding would necessitate the relocation of 20 miles of the Yosemite Valley railroad which ran through the reservoir site. It was also proposed to locate a 20,000-kw. power plant at the foot of the dam, part of the energy from which would be used for pumping within the district. The plans further contemplated the purchase of the Crocker-Huffman canal system and the addition of mains and laterals to make a total length of about 850 miles of irrigation canal.

THE SEVERN RIVER BARRAGE. As an essential element of the big tidal power project which was announced in England late in the year, there was a reinforced concrete dam across the River Severn below Chepstow. Here there was an exceptionally high range of tide and an estuary of large capacity so it was proposed to build a dam across the river to retain the water coming up at flood tide and to use the energy thus stored in turbo-generators below the dam. The available head of water would range from 5 to 30 feet. The project also involved the development of a high level lake by constructing a dam across a valley leading from the Wye Valley just above Tintern Abbey. This lake would serve as a reservoir into which the tidal water of the basin would be pumped during the periods of surplus energy, and this would be drawn upon to operate other turbines during the inactive periods at

the main dam so as to maintain a constant supply of power. The power features of the scheme naturally were of unusual interest and received the favorable and other criticism of engineers on their announcement. The main dam or barrage, however, did not present any striking engineering difficulties as the Severn at the point of crossing was about $2\frac{1}{2}$ miles wide with low lying country on both sides. The greater part of the river bed was exposed at low water and in the centre there was a deep channel known as "The Shoots." At the dam or barrage it was proposed to build a level roadway along the crest and also provide new trackage for the Great Western Railway Co.'s line between the West of England and Wales. The barrage would also provide a locked basin for shipping purposes of over 27 square miles, much of which would be able to accommodate ocean going vessels and be usable at all stages of tide. The scheme was most ambitious having an important bearing on various industrial developments in this region, but it must be said that the entire project proposed by the Ministry of Transport, planned by Sir Alexander Gibbs, J. Ferguson, and T. R. Menzies, and estimated to cost between \$40,000,000 and \$150,000,000, was regarded by many as idealistic and impracticable. It was fully discussed in the *Engineer* (London), issue of Dec. 3, 1920.

PROPOSED BHAKRA DAM. During the year what was stated would be the highest dam in the world was under discussion for construction across the Sutlej River, India, in the Bhakra Gorge, some 40 miles above Rupar, the head-works of the existing Sirhind Canal. This Bhakra Dam as designed would be 395 feet high from foundation level to roadway, with a depth of water in front of the dam of about 375 feet. The length of the top of the dam was to be 1015 feet. The water to be stored by the dam in the month of August annually would amount to 2,500,000 acre-feet.

DANER, WILLIAM FRANKLIN. Judge, died at Newton, Mass., August 5. He was born at Somerville, Mass., June 26, 1863, graduated at Harvard in 1884, and practiced law in Boston until 1906. Meanwhile he had served on the Board of Aldermen in that city and in the State Senate of which he was president for three years. In 1906 he was made a justice of the Supreme Court of Massachusetts. He wrote largely for magazines on legal and historical subjects.

DANISH LITERATURE. See SCANDINAVIA.

DANZIG. A free state, as constituted by the Treaty of Versailles in 1919, formerly belonging to Germany. Area, about 579 square miles; population of the state proper in 1919, 182,468; estimated population of the district about 200,000. According to the German census of 1910, the population of the state was 170,337. The shipping of 1918 showed a very heavy falling off—more than one-half since 1913. About 50 per cent of the tonnage was German, the remainder being generally Norwegian, British, Swedish, and Danish. Article 102 of the Treaty provided for the establishment of the city of Danzig along with its surrounding territories as a free state under the protection of the League of Nations and the drawing up of a constitution under the auspices of the League. The League of Nations provided for its administration by

the appointment of a High Commissioner, this office being held in 1920 by Sir Reginald Tower. A constituent assembly was to be held and named and meanwhile the High Commissioner appointed a state council of three (March 5, 1920). Provision was made for a legislative body of 90 members elected by universal suffrage without distinction of sex for all persons 20 years of age and upwards who had resided in the state after Jan. 1, 1919. The principle of proportional representation is observed.

DARTMOUTH COLLEGE. A non-sectarian institution of higher learning at Hanover, N. H., founded in 1769. In the fall of 1920 there were 1818 undergraduates and 70 graduates enrolled. The faculty contained 156 teachers. The endowment amounted to \$5,000,000 and the library contained about 150,000 volumes. During the year a new dormitory known as Topliff Hall and the Spalding swimming pool were opened, and work on the new chemical laboratory was begun. President, Ernest Martin Hopkins, Litt. D., LL.D.

DAVIS, JOHN MOORE KELSO. Brigadier-general United States army, died at Hartford, Conn., May 20. He was born at Washington, D. C., Jan. 31, 1844, served as a volunteer in the Civil War and graduated from the United States Military Academy in 1867, after which he served in the artillery in the regular army. He was made brigadier-general May 25, 1907, and for the next seven months was in command of the Department of the Gulf when he was retired.

DAVIES, JULIEN TAPPAN. Lawyer, died in New York City, May 6. He was born in New York City Sept. 25, 1845, served in the Civil War, taking part in the Gettysburg campaign and graduated at Columbia College in 1866. He studied law and was admitted to the bar in 1867. He was council for the New York Elevated Railways and the Manhattan Railway Company from 1884-1914 and was a director of important financial institutions. In 1886 he compiled the statutes and decisions of New York State relating to Taxation.

DAY, WILLIAM PLUMBER. Rear-admiral, United States navy, died at Nice, France, January 4. He was born in New York City Sept. 30, 1848, and graduated at the United States Naval Academy in 1869. He rose to the rank of commander, Dec. 12, 1899, and captain, Jan. 12, 1905, and was retired soon afterwards (June 11, 1906) with the rank of rear-admiral. He had meanwhile served on many ships including the *Vixen*, of which he was in command 1890-1900, and the *Mohican*, 1902-04. In 1904-05 he had charge of lighthouse inspection in the 12th district and in 1905-06 of the navy-yard at Mare Island, Cal.

DEATH RATE. See VITAL STATISTICS.

DELAWARE. POPULATION. According to the preliminary report of the census of 1920, there were 223,003 residents in the State, Jan. 1, 1920, as compared with 202,322 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 10,128, a falling off of 6.5 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Prod., bu.	Value
Corn	1920	190,000	7,125,000	\$5,344,000
	1919	195,000	5,850,000	8,482,000
Wheat	1920	120,000	2,040,000	3,488,000
	1919	130,000	1,560,000	3,323,000

Hay	1920	91,000	*128,000	2,700,000
	1919	87,000	*112,000	2,870,000
Potatoes	1920	11,000	1,166,000	1,166,000
	1919	12,000	996,000	1,245,000
Sweet potatoes	1920	8,000	1,024,000	1,024,000
Bales.				

MANUFACTURES. A preliminary statement of the general results of the census of manufactures for the State showed a consistent increase at the census of 1919, as compared with that for 1914, except that the number of establishments decreased from 808 in 1914 to 664 in 1919, and the number of proprietors and firm members from 735 in 1914 to 592 in 1919. In the order of their importance from a percentage standpoint, the increases for the several items rank as follows: Value added by manufacture, 226.1 per cent; wages, 223.8 per cent; value of products, 194.5 per cent; materials, 170.1 per cent; salaries, 126.1 per cent; capital, 113.6 per cent; wage earners, 30.5 per cent; primary horsepower, 29.9 per cent; and salaried employees, 26.5 per cent. The capital invested, as reported in 1919, showed a gain of \$78,721,000, or 113.6 per cent, over that in 1914. The average capital per establishment was approximately \$223,000 in 1919 and \$86,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$53,825,000 or 170.1 per cent. The average cost of materials per establishment in 1919 was approximately \$129,000, and in 1914, \$39,000. In addition to the component materials which enter into the value of products, the cost of materials in this summary includes the cost of fuel, mill supplies, and rent of power and heat. The value of products in 1919 showed an increase over that in 1914 of \$108,964,000, or 194.5 per cent. The average per establishment in 1919 was approximately \$248,000 and in 1914 \$69,000. The value added by manufacture represents the difference between the cost of materials used and the value of the products manufactured from them. The value added by manufacture in 1919 showed an increase over that in 1914 of \$55,139,000, or 226.1 per cent. The value added by manufacture in 1919 formed 48.2 per cent of the total value of products and in 1914 43.5 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 701, or 26.5 per cent, while the average number of wage earners increased 6767 or 30.5 per cent. A comparative summary for the State for 1914 and 1919 follows:

	Census		Per cent of increase 1914 1919 ^a
	1919	1914	
Number of establishments	664	808	-17.8
Persons engaged in manufactures	32,858	25,533	28.7
Proprietors and firm members	592	735	-19.5
Salaried employees	3,944	2,643	26.5
Wage earners (average number)	28,922	22,155	30.5
Primary horsepower	83,669	64,403	29.9
Capital	\$148,045,000	\$69,324,000	113.6
Services	44,541,000	14,782,000	201.3
Salaries	7,689,000	3,400,000	126.1
Wages	36,852,000	11,382,000	223.8
Materials	85,474,000	31,649,000	170.1
Value of products	164,999,000	56,035,000	194.5
Value added by manufacture (value of products less cost of materials)	79,525,000	24,386,000	226.1

a A minus sign (—) denotes decrease.

EDUCATION. The school laws were revised and a new school code was enacted by the Legislature, introducing important modifications in the system.

FINANCE. The total balance at the close of

the fiscal year 1919 was \$1,530,772. The cash receipts for the general fund during 1919 were \$3,259,722, and the expenditures \$2,425,681. The outstanding indebtedness of the State on Jan. 12, 1920, was \$2,066,785.

ELECTIONS. The vote for the presidential elections of 1920 was as follows: Harding (Republican), 52,858; Cox (Democrat), 39,897; Debs (Socialist), 1002; Watkins (Prohibitionist), 998; as compared with the following vote in the presidential election in 1916: Hughes (Republican), 26,011; Wilson (Democrat), 24,753. The vote for governor in 1920 was as follows: Denney (Republican), 51,895; Lynch (Democrat), 41,638.

OFFICERS. Governor, William D. Denney; Lieutenant-Governor, J. Danforth Bush; Secretary of State, Everett C. Johnson; Attorney-General, Sylvester D. Townsend, Jr.; Treasurer, George M. Fisher; Auditor, Daniel Thompson; and Commissioner of Insurance and Banking, Horace Sudler.

JUDICIARY. Chancellor, Charles M. Curtis; Chief Justice, James Pennewill; Associate Justices, Herbert L. Rice, William H. Boyce, Henry C. Conrad. Associate Judge-at-large, Thomas B. Heisel.

DEBOVE, MAURICE. French physician, died early in December. For some years he had been permanent secretary of the Academy of Medicine. He was born in Paris, March 11, 1845. After many years of hospital practice he was elected to the chair of pathology in the faculty of Paris in 1890; exchanged this professorship in 1901 for that of clinical medicine; and after 1902 was for a short time dean of the medical faculty. He was elected to the Academy of Medicine in 1892 and became permanent secretary in 1913. He was one of the favorite pupils of Charcot and made a specialty of neuropathy, publishing several important works on digestive pathology and intoxicants. One of the main features of his career was his activity in the campaigns against the various great modern scourges such as tuberculosis and alcoholism. As a professor he was distinguished for his lucidity, keenness, and learning, and he exerted wide influence.

DE KOVEN, REGINALD. Musical composer, died in New York City, January 16. He was born at Middletown, Conn., in 1861, and educated in Europe, graduating at Oxford, England, in 1879. He studied the elements of music in

Stuttgart and Frankfort and afterwards pursued courses in light opera composition under well-known European composers. After returning from Europe in 1882, he lived for the most part in New York, but passed two years in Washing-

ton as conductor of the Washington Symphony Orchestra. After that he became the music critic of the *New York World*. His earliest success was the celebrated light opera, *Robin Hood* (1890), whose scores became familiar throughout the entire country, and are still remembered. Other light operas are *Begum* (1887); *The Fencing Master* (1892); *Rob Roy* (1894); *The Highwayman* (1897); *The Three Dragoons* (1899); *Maid Marian* (1901); *The Student King* (1906); *The Snowman, The Wedding Trip*, etc.; and he produced a grand opera, *Canterbury Pilgrims*, at the Metropolitan Opera House, New York City, in March, 1917. His songs numbered over 300 and included some that were exceedingly popular, such as "Oh Promise Me."

DE LISLE, EDWIN J. L., M. P. British writer, died May 5. He was born June 13, 1852, studied in German universities, and became private secretary to the governor of the Straits Settlements and afterwards to the postmaster-general. He wrote *The Majesty of London*; *The Parliamentary Oath*; *The Royal Declaration Amended*; *The Evolutionary Hypothesis*, and studies on Luther and Wyclif.

DENMARK. A Scandinavian kingdom of

of Copenhagen founded in 1479 has five faculties, with 100 professors and teachers and about 2900 students. Women are admitted to the faculties on equal terms with men. There are besides various technical schools, training colleges for teachers, commercial schools, agricultural schools, etc.

PRODUCTION. The chief occupation is agriculture. By 1919 production was recovering from the effects of the war. In that year agricultural products gave a fairly good yield and in general brought high prices. Wheat and barley gave something above middle yield; rye and oats a little under middle; and root crops yielded about normal. The kohlrabi yield was particularly good as it always seems to be in cold years. The total yield of potatoes was large, principally as a result of the potato propaganda which was carried on during the war years. The hay crop was under middle as was the straw. Of field hay there was harvested only one-half of normal, while of meadow hay there was harvested three-fourths of the normal yield. The following table shows the various yields of the crops in Denmark for 1918 and 1919, and a comparison with the 1909-13 average:

Crops	Average, 1909-1913 Met. tons	1918 Met. tons	1919 Met. tons
Wheat	148,200	172,300	161,200
Rye	446,400	323,300	378,700
Barley	544,500	467,400	533,900
Oats	779,600	603,400	690,700
Mix'd oats and barley	360,900	324,900	379,000
Buckwheat	2,400	2,700	2,200
Peas	8,700	11,300	17,500
Potatoes	840,000	1,105,100	1,444,800

Crops	Average, 1909-1913 Met. tons	1918 Met. tons	1919 Met. tons
Carrots	228,800	129,600	127,400
Beets	4,444,600	5,266,700	5,114,800
Kohlrabi	4,554,600	4,559,400	4,604,100
Turnips	2,738,500	2,334,500	2,112,500
Sugar beets	788,500	944,400	1,016,600
Chicory beets	20,600	24,400	22,800
Field hay	1,090,400	343,400	591,600
Meadow hay	710,600	412,200	536,800
Straw	3,518,000	2,195,600	2,665,800

northern Europe, consisting of the peninsula of Jutland and the Danish archipelago to the east (including the islands of Zealand, Fünen, Lolland, Falster), the outlying island of Bornholm in the Baltic, and the Färoe islands in the Atlantic. By the terms of the Peace Treaty a portion of Schleswig was to decide by plebiscite whether to remain under Germany or to attach itself to Denmark. See below.

AREA AND POPULATION. The total area exclusive of Schleswig is 15,582 square miles and the total population exclusive of the Färoes and Schleswig was given in 1916 as 2,940,979. The capital, Copenhagen, had a population in 1916 of 506,390 and, with suburbs, 605,772. Only about 3.27 per cent of the total population in 1911 were foreign born.

In 1919 about 3300 people emigrated as compared with an annual emigration of between 8000 and 9000 before the war. In 1918 there were about 2500 emigrants. About 40 per cent of the 1919 emigrants were women and the chief country of destination was the United States. Canada and South America received a small number.

EDUCATION. Elementary education is free and compulsory between the ages of seven and 14. The schools are maintained by taxes on the communes. In 1918 there were 3466 public elementary schools of which 63 were in Copenhagen, 158 in other towns, and 3245 in the rural districts. The total number of pupils in 1918 was 406,000. Besides the elementary schools, there were 13 government schools and 150 private schools and certain unclassified private schools, which had in 1918 an attendance of 60,000. The University

Livestock reported in 1919 were as follows: Horses, 558,500; cattle, 2,188,100; sheep, 509,500; swine, 715,900; hens, 12,134,500. See AGRICULTURE.

The latest figures given out by the Bureau of Fisheries were for the year 1918. The total catch for that year amounted to 65,100,000 kilos, while the catch in 1917 was 63,400,000 kilos. In 1915 the catch was 66,500,000 kilos, which was the greatest that had been caught up to that time. The value of the catch for 1918 was 41,700,000 crowns (about \$11,175,600, normal rate), a considerable advance over the 1917 value, which was 35,000,000 crowns (about \$9,380,000), but the decreasing value of the Danish crown, as well as the increasing value of materials and labor, were such uncertain factors that it was impossible to form an accurate comparative idea of the catches by measuring them in money values. The prices for 1918 were relatively good. The oyster fisheries, which are considered important, are not reckoned above. In the season 1918-19 about 4,000,000 oysters were sold. Danish oysters, especially those called "Limfjords," after the Limfjord, where they are gathered, are much prized not only here but in Norway and Sweden. They are of good size, but have what is called a "beard," which is bitter to taste and is usually removed before eating. There were about 21,000 fishermen engaged in the industry in 1918, as compared with about 20,000 in 1917. The fishing fleet in 1918 numbered about 17,000 boats, of which about 5000 were supplied with motors. In 1918 was seen the best year in history of the Icelandic and Faroe Islands' fisheries, which are reckoned independent of Denmark's. These fish-

eries show in 1918 an advance of 22 per cent in quantity and 90 per cent in value compared with the 1916 fisheries. The catch on the Faroe Islands alone was valued at about 10,000,000 crowns (about \$2,680,000, normal rate) for 1918, as against half that amount for 1917. The value of the 1913 catch was not one-fourth as large as it was for 1918. The cod fisheries (the most important catch) on the Faroe Islands in 1918 reached a size hitherto unknown, amounting to 10,500,000 kilos. In 1917 the catch was 8,000,000 kilos; in 1913, 5,500,000 kilos.

There was a serious lack of sufficient fuel in Denmark and a general need of a future reliable market for coal. The source of cheap coal supply before the war was Germany, but where about 100,000 tons were formerly imported per month only about one-fourth of that quantity was being imported in the beginning of 1919, and by April the figure had fallen to about 4,000 tons. Later it averaged about 15,000 to 20,000 tons a month. The price on the German article had, however, gone much higher than the price on English coal, so that Germany is becoming a negligible quantity as a source of supply for fuel. Denmark received from England about 125,000 tons in January and 135,000 in February, which amount went to 260,000 tons in June and 280,000 in July. It then seemed that the great problem was solved, theatres and restaurants were permitted to remain open longer, and the war-long rationing of coal was partially dispensed with. August put a sudden end to prospects, as a strike occurred in England and the rise in the value of English currency made matters worse. During the rest of the year coal imports from England averaged about 100,000 tons and the former rationing had to be resorted to.

COMMERCE. The imports and exports in 1919 were as follows:

Articles	Imports	Exports
Agricultural implements. 100 kilos.	87,418	
Animals, live:		
Cattle head	442	32,301
Horses do.	4,283	1,457
Automobiles number	6,194	
Bicycles 100 kilos.	3,849	
Bicycle parts do.	9,818	
Boots and shoes do.	2,377	
Breadstuffs:		
Barley do.	343,266	10,879
Corn meal do.	31,900	58
Flour—		
Rye do.	198	80,250
Wheat do.	175,581	69,478
Maize do.	1,917,679	130
Oats do.	82,578	5,178
Rice and rice products do.	234,082	
Rye do.	100,385	52,500
Wheat do.	5,233	47,014
Cement, Portland tons	67	4,687
Cinders do.	28,756	
Chemicals 100 kilos.	159,806	
Cocon do.	63,174	
Coal tons	1,968,726	
Coke do.	259,706	
Briquettes do.	63,388	
Coffee 100 kilos.	288,173	10,241
Colors do.	39,750	
Cordage and twine do.	55,992	
Cotton do.	64,619	
Cotton manufactures do.	194,540	
Cryolite tons	3,574	
Dairy products:		
Butter 100 kilos.	3,145	366,793
Cheese do.	2,557	
Milk and cream do.	25	41,625
Earthen and Chinaware:		
Brick—		
Building thousands	20,148	
Fire 100 kilos.	75,552	
China and porcelain do.	10,180	
Crockery and sanitary equipment 100 kilos	18,727	

Pipes and tubes do.	102,406	
Tiles thousand	3,184	
Eggs 100 dozen	21	282,055
Fertilizers tons	295,975	
Fish 100 kilos.	116,388	533,461
Flint, pebbles tons		11,026
Glass, plate 100 kilos	50,138	
Glassware do.	48,153	
Hay do.		2,935
Hemp do.	33,398	
Hides and skins do.	30,318	59,659
Iron and steel manufactures, n.e.s.:		
Beams and bars, iron. 100 kilos.	813,575	
Chains and cables do.	13,163	
Hoop, iron do.	59,375	
Nails do.	17,432	
Pig iron do.	242,863	
Pipes and tubes do.	159,504	
Plates do.	644,993	
Rails, railroad do.	154,382	
Scrap iron do.		321,087
Screws, bolts, nuts do.	43,213	
Wire do.	153,287	
Kaolin tons	3,907	11,894
Leather 100 kilos.	20,860	
Linoleum do.	21,370	
Machines, sewing do.	6,374	
Malt, barley do.	169,860	21,850
Margarin do.	2,992	
Matches do.	8	
Meat and meat products:		
Bacon and pork do.		32,154
Beef, fresh do.		80,425
Casings, etc. do.	12,538	28,698
Lard do.	78,220	45,572
Mutton, etc. do.		4,142
Premier jus do.	30,933	
Stearin do.	3,884	
Tallow do.	10,191	3,314
Petroleum do.	691,058	63,553
Metals and manufactures, n.e.s.:		
Brass manufactures. 100 kilos.	7,136	
Copper and brass do.	11,265	
Copper manufactures do.	47,427	
Lead do.	25,401	
Lead plates do.	10,860	
Metal waste do.		30,924
Tin do.	3,138	
Zinc do.	14,446	
Zinc plates do.	18,377	
Naval stores:		
Rosin do.	80,053	
Tar do.	8,884	
Turpentine do.	6,108	
Oleomargarin 100 kilos.	13,612	
Oil cake do.	1,281,245	
Oils:		
Fish do.	24,012	
Mineral—		
Gasoline do.	194,674	
Other do.	530,846	
Vegetable—		
Cottonseed do.	43,524	
Soya bean do.		34,543
Other do.	65,761	
Paper and cardboard do.	189,305	
Pyrites tons	81,744	
Rubber:		
Raw do.	7,097	
Manufactures do.	20,681	
Salt tons	31,072	
Seed:		
Beet 100 kilos.	9,101	
Grass do.	58,822	
Silk goods do.	8,620	
Silk yarn do.	465	
Straw do.		1,551
Sugar do.	51,778	39,051
Tea do.	13,398	
Tobacco:		
Raw do.	145,324	
Manufactures do.	4,257	
Vegetables and fruits:		
Potatoes do.	8	1,254,682
Other do.	243,005	103,816
Wines and spirits:		
Wines—		
In bottles hectoliters	2,548	
In casks 100 kilos.	85,328	
Spirits hectoliters	15,682	
Wood:		
Firewood cubic meters	19,117	
Staves 100 kilos.	5,922	
Timber and lumber. cubic meters	933,874	
Wood pulp 100 kilos.	346,563	
Wool do.	37,855	12,794
Woolen manufactures do.	71,398	
Norm.—100 kilos.=220.46 pounds; 1 hectoliter = 26.42 gallons; 1 cubic meter = 35.31 cubic feet.		

COMMUNICATIONS. Denmark proper not including Copenhagen had at the end of 1918 4197 miles of roads besides 23,322 miles of by-ways. Railways of a total length of 2635 were open for traffic, of which 1283 miles belonged to the state. On March 31, 1919, the total value of the state railways was 359,574,936 kroner. Post offices numbered 1240 and telegraph lines had a mileage of 2273.

Denmark's merchant marine plays a most important part in bringing up the country's credit balance in the world's trade. Toward the end of 1919 the fleet was composed of the following ships over 20 register tons gross:

Kind	Number	Gross tons	Net tons
Steamships	528	570,072	386,912
Motor vessels	550	104,970	65,011
Sailing vessels	852	115,846	101,688
Total	1,930	790,888	553,606

This shows a gain of about 55,000 tons gross over the 1918 figures, but there is still a long way to go before the 250,000 tons lost during the war are replaced. This fleet has been largely dependent upon the United States and Great Britain, as these countries by treaty had disposition over more than one-half of Denmark's ships, while the remainder were bound by fast restrictions to carry imports at officially set freight rates. In April, 1919, however, the tonnage chartered abroad began to return to Danish owners, and by autumn only a few ships remained in foreign service. The arrangement with England and America was most profitable to Denmark as the unusual returns of the shipping companies show. Dividends for 1919 ranged from 25 up to and over 135 per cent, averaging 65 per cent. They ranged from 12 to 65 per cent in 1918.

FINANCE. The budget estimates of 1919-20 were: Revenue, £32,579,717; expenditures, £30,563,851. The following details of the budget for 1920-21 are taken from the *Statesman's Year Book* for 1920:

Current revenue	Kroner
Balance of domain revenues	1,579,186
Balance of state undertaking	8,407,080
Interest on outstanding debt	8,571,744
Balance of funds, etc.	681,778
Direct and indirect taxes	404,760,000
Balance of lotteries	1,461,504
Separate revenues	8,026,607
Total revenue	411,628,784
Current expenditures	Kroner
Civil list and appanages	1,222,000
Rigsdag	2,000,000
Interest and expenses on stated debt	39,855,875
Council of State	550,462
Ministry of Foreign Affairs	2,119,428
Ministry of Ecclesiastical Affairs	2,759,910
Ministry of Public Instruction	58,428,115
Ministry of Justice	30,162,685
Ministry of Interior	30,757,600
Ministry of Agriculture	8,579,121
Ministry of War	40,106,580
Ministry of Marine	25,085,000
Ministry of Finance	22,578,284
Ministry of Public Works	8,586,247
Ministry of Commerce and Navigation	3,159,611
Pensions	4,550,673
Total expenditure	270,451,576

GOVERNMENT. Executive power is vested in the King who acts through a responsible ministry and legislative power in the Rigsdag or Diet, consisting of the Folkething or lower house with 140 members and the Landsting or senate with 72 members. The King in 1920 was Christian X (born Sept. 26, 1870), and the Prime Minister and Minister of Finance was M. Neergaard.

HISTORY

MINISTERIAL CRISIS. The resignation of the government was demanded. March 27, by the King, who accused it of being "unpatriotic." M. Neergaard, the Liberal leader, was called upon to form a new ministry but became straightway the object of attack by all the progressive elements in the country and there were even threats of setting up a republic unless the dismissed cabinet was restored. M. Neergaard having failed to command a majority in Parliament, the King called upon M. Lieb to form a government without political character which should serve simply to order the new election for the lower house. This new ministry held office for only four days, retiring before the threat of a general strike. A provisional cabinet was then formed of members who opposed the King's dismissal of the Zahle ministry. The Prime Minister was M. Friis, former director of the Ministry of Justice.

ELECTIONS. The government as a result of the September elections had 82 members in the lower house, the same number as before, while the opposition had 66 members, which was eight more than at the July election. The government members comprised the Conservatives, the Left, and the Tradesmen's party. The Left polled 410,464 votes, which gave it 52 members. The other parties were represented in the lower house as follows: Socialists, 48 members; Conservatives, 27; Tradesmen's party, 3. The returns indicated a substantial majority for the government also in the Senate, where the parties stood as follows as the result of the election of September 21st: Conservatives, 68; Farmers, 28; Social Democrats, 76; Liberals 45; Left Socialists, 4. The Prime Minister on September 15th declared that Denmark in its foreign policy did not wish to exclude any nation from its relations and that it was desirable to be on the best possible terms with Germany. He also declared that Denmark would do her best toward placing the League of Nations on a strong basis and hoped that a real reduction of armaments would be effected.

THE SCHLESWIG PLEBISCITE. As recounted in the preceding YEAR BOOK in the plebiscite on the Schleswig question a large majority in the first zone decided for Denmark while in the second zone a larger vote was cast for union with Germany. At the beginning of the year the government was still undergoing attacks from the Conservatives for this result and was accused of having played into the hands of Germany. It was blamed for not having held a plebiscite in the southern zone. See POLAR RESEARCH.

DENVER UNIVERSITY. An institution of higher learning at Denver, Colo., founded in 1864. The students numbered 1774 and the members of the faculty 200. President, H. A. Bucktel, LL.D.

DE PAUW UNIVERSITY. A co-educational institution of higher learning at Greencastle, Ind., under the auspices of the Methodist Episcopal Church; founded in 1837. In the autumn of 1920 there were 942 students in the College of Liberal Arts, of whom over 500 were women, and 83 students in the School of Music. The library contained 52,293 volumes. The total capital assets were \$3,725,020 and the receipts were \$219,750. President, George Richmond Grose, D.D., LL.D.

DESCHANEL, PAUL. See FRANCE.

DES PLANCHES, Baron EDMONDO MAYOR. Italian diplomat, died at Rome, Italy, December 27. After 1901 he was Italian ambassador to the United States for nearly 10 years. He was born July 27, 1851, and went into the service of the state at an early age, becoming secretary to the minister of foreign affairs. In April, 1894, he was named counsellor to the Italian embassy in Berlin, and he afterwards held a similar position at the Italian embassy in Constantinople. After serving as ambassador to the United States, he was again sent to Constantinople, where he was ambassador for a year.

DESTROYER. See BATTLESHIPS AND OTHER WAR VESSELS.

DETROIT, MICH. See CITY PLANNING; WATER WORKS.

DETROIT, UNIVERSITY OF. An institution of higher learning at Detroit, Mich., under the auspices of the Roman Catholic Church, founded in 1877. Enrollment in 1920 was 1826 and there were 136 members in the faculty. The library contained 25,000 volumes. President, Rev. William T. Doran, S.J.

DEUEL, JOSEPH MERRITT. Magistrate of New York, died in that city, December 4. From 1904 to 1913 he was judge of Special Sessions. He was born at Deerfield, N. Y., and was educated in the public schools. After serving as secretary to Roscoe Conkling, he held several positions in the Federal courts and was police justice in 1894 and city magistrate from 1895 to 1903. During his term as Special Sessions Justice occurred the celebrated *Town Topics* case which was followed by charges on the part of the prosecuting attorney, Mr. Travis Jerome, that Justice Deuel in the course of the trial had been guilty of misconduct which disqualified him for judicial office. The prosecution was unsuccessful, and later Judge Deuel sued the Mayor for costs.

DE WEND-FENTON, WEST FENTON. British journalist, died, April 6. He was born at Oldbury, Oct. 23, 1881, and graduated with honors at Oxford, where he distinguished himself in athletics. He was for many years prominent in sports, particularly in racing, and rode in many races himself. He became the editor and managing director of the *Sporting Times*, and subsequently the proprietor and editor of the *World*. He wrote a volume entitled the *Primrose Path*.

DEXTER, FRANKLIN BOWDITCH. Librarian and historian, died at New Haven, Conn., August 13. He was born at Fairhaven, Mass., Sept. 17, 1842, graduated at Yale in 1861, and was assistant librarian from 1869 to 1912, serving meanwhile as registrar-secretary of the corporation and learned professor of American history. He wrote various volumes pertaining to the biography and annals of the college; a documentary history of Yale University (1916); edited two volumes of New Haven town records 1649-84 (1917-18).

DIAMONDS. Diamonds after the war experienced a pronounced boom, which naturally led to active mining and search in new as well as established fields. Along with the general progress toward deflation this great demand and the high prices characteristic of 1919 lasted but a few months into 1920. In South Africa the slump came in March, though the industry was active during the entire year. As a result of the record prices which prevailed in 1919 the De Beers Consolidated Mines, Ltd., paid their great-est dividend. Naturally the United States was

a leading customer and in 1919 its imports of precious stones and pearls, of which diamonds formed a substantial part, amounted to the notable record figure of \$105,273,543. In 1920 the demand continued for the first half of the year, and for nine months the imports of precious stones and pearls amounted in value to \$63,185,739, or a larger total than for any corresponding period except that of 1919. The decrease of 1920 was noted especially in diamonds and pearls. The new diamond areas opened up in South Africa included a field in the Postmasburg region about 140 miles west of Kimberley where pipes recently discovered were being worked, and at Thlaping farm on Taung's Reserve, Bechuanaland, though in the latter case the output up to the end of June, 1920, 7207 carats, proved below expectations. The Consolidated Diamond Mines of Southwest Africa, an English enterprise, in which some Americans were interested, had taken over the fields formerly operated by German interests. From the Belgian Congo in 1920 an output of about 215,000 carats of diamonds were reported from the Kasai fields by the Formentière Company which increased its reserves of diamondiferous gravel. Here development rather than increased production was the order, and the bounding and examination of its 4000 miles of diamond bearing land were being undertaken. In addition development work in the Belgian Congo was being undertaken by five associations whose production, though slight in 1920, it was believed would become important in 1921. An allied company operating in Angola, Portuguese West Africa, in 1920, recorded a production of approximately 100,000 carats. The YEAR BOOK from time to time has recorded progress in the possible development of diamond fields in the United States. In 1920 work was done in Pike County, Ark., and the preliminary efforts brought to light about 3000 stones, weighing on an average four-tenths of a carat. In South America British Guiana in 1920 produced diamonds amounting to 18,159 carats.

DIESEL ENGINE. See INTERNAL COMBUSTION ENGINE.

DIETETICS AND DISEASE. The older scientific plans of feeding, together with the numberless popular fads in eating, are but the precursors of a system of dietetic treatment of disease of almost unlimited possibilities. Recently the statement has been made by conservative men that faulty eating can give rise to almost any one of the morbid conditions and that in consequence almost any diseased state can be benefited by diet. But we must no longer understand diet in its old restricted sense. It was once taught that the essentials of diet comprised only a certain amount of nitrogenous food for growth and repair and a much larger fraction of combustible food for heat and energy, with the addition of a little mineral matter which, however, occurs in sufficient amount in the other foods. Eventually it was discovered that certain animal glands contained powerful principles which supplied certain substances to the body in which the latter was deficient as the result of heredity, privation, or disease. These "internal secretions" were at first used only in well marked conditions of underdevelopment—retarded physical and mental growth—but gradually it became recognized that almost any one out of health might be suffering temporarily from deficiency of one of the numerous secretions, and a new system of therapeutics

known as endocrinology has developed. Although for convenience's sake these substances are given as if they were drugs, in so many grains so many times a day, they were originally given as food and since they supply substances in which there is a deficiency in the organism, they remain foods or at least a combination of food and drug—and it is becoming increasingly difficult to draw a line between the two classes. These substances are also given by hypodermic injection and in certain cases animal or human glands are transplanted with the best effects. The whole of the subject of "rejuvenation" which is now being commercially exploited is comprised in the transplantation of certain glands or the hypodermic injection of their extracts.

We have known something about internal secretions for more than a generation but there is another type of reinforcing the organism by feeding which is much more recent, although its beginnings go back many years—in fact ever since it was learned that scurvy can be prevented by fruit juices and other dietetic articles. In fact it was several centuries ago that the introduction of the potato from America to Europe was credited with the stamping out of land scurvy, in the latter continent. To-day we say that fruit and vegetables cure scurvy because as a result of scanty or unbalanced regimen the body has been deprived of certain substances called "vitamines" which are present in the said articles in abundance. But it is probably a mistake to apply the term in question to antiscorbutic food. This term "vitamine" came into use comparatively recently in connection with a special exotic disease caused by eating peeled rice, the cortex of the rice grains containing a substance necessary for health in those who live almost wholly on rice. These two examples suggest the existence of others and in fact of a whole group of deficiency diseases which differs radically from those due to absence of internal secretions. Just now for want of a better term we may speak of these substances as vitamins. When there is an abundance and variety of food we need have no fear of deprivation of vitamins, as these occur in a great variety of ordinary foods. As far as known but one entirely new food article has come into use on the strength of richness in vitamins, and this is yeast in the form of the compressed cakes which are for sale everywhere. But on a restricted or unbalanced diet it is possible that cooking and the use of decorticated cereal grains, rejection of certain portions of food as the skins of potatoes, preservation of all kinds, ordinary sterilization and other tampering with crude food supplies may cut off something necessary for growth and development and maintenance of health. This can be easily studied in artificially fed babies.

But vitamins by no means exhaust the list of food principles. We have long known that "animal" food (comprising also vegetable protein) is split up into end products known as amino-acids, before final utilization in the body. The number of these substances is very large and originally it was thought to matter little which were present or absent in a given digestion process. Different kinds of protein are comprised of different amino-acids and as numerous proteins occur side by side in the daily diet the variety as well as the number of the end products seems infinite in possibilities. Prolonged study of the individual

amino-acids from all angles has shown that they have not only special dietetic activities but also possess in certain cases a definite physiological action. They thus bear a strong resemblance to internal secretions although formed in the digestive tract. Moreover these end products often decompose in the intestine as a result of bacterial activity and some of the amines, as these putrefactive products are called, are physiologically active if not actually poisonous. We are therefore confronted with a very difficult dietetic problem of two fold character, first to insure to the subject the kind of amino-acid needed for growth and nutrition and the maintenance of equilibrium (health), and second to keep out the end products which are unnecessary and therefore perhaps dangerous. Recently Zuntz of Berlin has prepared from some substance rich in keratin as hair, wool, horn, etc., aminoacids which when fed to sheep greatly increase the yield of wool; and such discoveries are of great promise for the future. There are still other cognate problems of diet of great interest but they cannot be considered in the available space.

DIGGLE, JOHN WILLIAM. Bishop of Carlisle after 1904, died March 24. He was born at Pendleton, England, March 2, 1847, educated at Oxford, where he graduated with honors. After his ordination in 1871 he was curate of Whalley Range and of parishes in Liverpool and Walton, and from 1875 to 1897 was vicar of Mossley Hill. In 1891 he was president of the Liverpool Council of Education and in 1899 preacher at the University of Oxford. Between 1902 and 1904 he was rector at Birmingham. His publications include *Godliness and Manliness; True Religion; Rainbows; Religious Doubt; The Ministry of the Word and Sacraments; The Foundation of Duty*, etc.

DIPHThERIA. Several years ago, the high point of the preventive action of diphtheria antitoxin seemed to have been attained and while mortality has been reduced 80 per cent, incidence or morbidity has been cut down only 25 per cent. This was due to the briefness of the immunity, which lasted only from two to four weeks. At this juncture the Schick test was introduced, for it revealed in advance the subjects who are susceptible to the disease. These could then be treated by the new vaccines until the susceptibility had been removed. Of the so-called non-immunes about 92 per cent were found to be immune a year after the vaccine treatment. The latter differed from the original serum in being composed both of toxin and antitoxin, combining serum and vaccine prevention. Such immunity was moreover of indefinite length and it is hoped that it is practically permanent. In only a few per cent does the Schick test again become positive, showing loss of the immunity. In the report of the committee appointed by the New York City Health Office on the Schick test there was a material of over 300 children who had originally given a negative Schick test and who were therefore naturally immune. These were followed up over several years and in but five did the reaction become positive, showing that this natural immunity may in rare cases be forfeited. The vaccination treatment, unlike the results commonly encountered under the circumstances, was well borne by very young children. This is an argument for the early application of the preventive vaccination. Children of school age,

many of whom are naturally susceptible to diphtheria because of lack of opportunity for treatment during their infancy, may in time come to be vaccinated by the school physicians by wholesale. This movement is already under way in some of the schools, of course with permission of the parents after the latter have received a course of instruction in the shape of leaflets, lectures, etc.

DIRIGIBLES. See AERONAUTICS.

DISASTERS. See EARTHQUAKES; FIRE PROTECTION; RAILWAY ACCIDENTS; SAFETY AT SEA; etc.

DISASTERS, MARINE. See SAFETY AT SEA.

DISCIPLES OF CHRIST. This communion is the fifth largest Protestant body in the United States. It dates its beginning from 1809, and its growth to present proportions has been very gratifying to its constituency. Exact figures for 1920 are not yet available, but data being gathered show figures approximating 1,400,000 members, 12,000 churches, and 9000 ministers. An annual convention called The International Convention of Disciples of Christ has advisory relations to administer work for missions, education, and benevolence. Recently six boards united under one called the United Christian Missionary Society with headquarters in St. Louis, Mo. This one board administers all the missionary and benevolent work at home and abroad. Its Board of Directors consists of 24 members divided equally between men and women. There is also an Educational Board which has advisory relations to 26 colleges, and a Board of Administrative and Social Service, and a Commission for Christian Unity. Practically every State in the United States and every province in Canada has a local organization which administers the work locally. There are many papers published by the Disciples of Christ, chief of which are *World Call*, *The Christian Evangelist*, *The Christian Century*, and *The Christian Standard*. The president of the United Society is F. W. Brunham, St. Louis, Mo. The secretary of the Educational Board is H. O. Pritchard, and the officers of the International Convention are Rev. Geo. A. Miller of Washington, D. C., president; and Rev. Robert G. Frank, Dallas, Texas, secretary.

DISEASES OF LIVE STOCK. See VETERINARY MEDICINE.

DISEASES OF PLANTS. See BOTANY.

DIXON, Sir ALFRED HERBERT. British cotton expert, died in London, England, December 10. He was chairman of the Cotton Control Board and president of the International Cotton Federation. In 1919 he headed the British delegation which attended the World's Cotton Conference at New Orleans (October), and he was a representative at the conference of Zürich, Switzerland, in June.

DOBRUJA. The name of the southeastern portion of Roumania. Area, about 8970 square miles; population (1912), 381,306, including Bulgarians, Roumanians, Turks, Tartars, Russians, Germans, and other races. Chief towns, Constantza (27,622), and Tulcha (22,186).

DOCKRELL, BENJAMIN MORGAN. British physician, died, March 15. He was born Feb. 2, 1865, and educated at the University of Dublin and at the Royal College of Surgeons. After 1888 he specialized in skin diseases and did important work as an officer in various medical in-

stitutions, serving for 25 years as physician to St. John's Hospital and being president of the London Dermatological Society after 1912. His publications include, *Hydronaphtol as a Specific in the Treatment of Ringworm* (1889); *The Skin and How to Keep it Healthy* (1893); *Lichen from a Histological Point of View* (1901); *Atlas of Dermatology* (1904), and various treatises and papers on specific skin diseases.

DOCKS AND HARBORS. The great marine terminal development carried on by the United States government in connection with the war, and the realization that with increased merchant shipping and commerce suitable provision must be made for its accommodation was incentive for many American cities to consider undertaking the increase of their port facilities as indicated in part below. There was some criticism of the slowness of the national government in releasing for commercial use many of the war terminals which were well suited for the purpose.

AMERICAN ASSOCIATION OF PORT AUTHORITIES. This organization held its annual convention at Chicago, September 30th to October 2d, at which were brought out interesting papers and discussion relative to harbor works and administration. The close relations of engineering to port development along the varied lines of general and economic planning design of structures, and handling of materials figured prominently in the proceedings. Local facilities, conditions, rates, and commerce at several individual seaports were discussed in one group of papers, while another group dealt with inland navigation and lake ports. Such topics as belt railways at ports, State as against city ownership, warehouse facilities, wide piers, and various construction methods, also were treated in papers, a particularly valuable one being presented by Captain F. T. Chambers, Chief Engineer, United States navy, former chief engineer of the Port Facilities Commission on the Shipping Board and in 1920 working with the Chief of Engineers, United States army, on port work. Captain Chambers' various reports in this field had proved remarkably informative and are well worth examination by all interested.

The Manchester ship canal, the New York State barge canal, the Illinois River waterway and some lake port developments were also subjects of papers. The latter included the Toronto harbor works, a rail and water terminal project for Detroit, and the Calumet harbor project at Chicago to eliminate the Chicago River as a hindrance to both land and water transportation.

Amendments to the constitution were adopted which provided, among other matters, for a larger representation of engineers. Officers for 1921 included Benjamin Thompson, of Tampa, Fla., president; and M. P. Fennell, Jr., Montreal, Can., secretary. The 1921 meeting was to be held at Seattle, Wash.

NEW YORK PORT DEVELOPMENT. In the spring of 1920 the largest steamship pier project ever contemplated for the city of New York was started, and contracts were let for the construction on Staten Island of 12 piers ranging in length from 1000 to 1160 feet and in width from 125 to 209 feet, all with uniform 300 foot slips. This action was important as transferring to Staten Island activities that previously had centred on the Manhattan and Brooklyn waterfronts, but the possible drawbacks did not appear to influence

the shipping interests for leases for the piers were signed before the contracts for their construction were let. The financial arrangement provided that in the course of 30 years all costs of the development by the city would be amortized. The 12 piers numbered from 6 to 18 were leased as indicated below, each pier being designed to meet in large measure the needs and wishes of the lessee.

DATA ON STATEN ISLAND PIER DEVELOPMENT
FOR NEW YORK CITY

No.	Average length, Width,		Shed	Lessee
	feet	feet		
6	1,124	125	1-story	Green Star S.S. Co.
7	1,084	125	1-story	Open
8	1,044	125	1-story	Wesol-Duval Co.
9	1,026	125	1-story	Moore & McCormack
10	1,137	125	1-story	Rapores S.S. Line
11	1,100	125	1-story	Intern'l Mercantile Marine
12	1,030	209	2-story	Pan American Terminal &
13	1,030	209	2-story	Dock Corporation
15	1,047	130	2-story	Union Transport Co.
16	1,110	130	2-story	
17	1,078	125	1-story	Nippon Yusen Kaisha
18	1,106	125	1-story	Compagnie Generale Transatlantique

The piers 125 feet wide are completely covered, except for string-piece space, with a one-story shed. The two 130 feet wide are completely covered with a two-story shed, the two 209 feet wide with a middle two-story shed of 131 foot width and a marginal railway space of 28 feet on each side. On these latter two full mechanical equipment was to be installed for handling freight direct from the cars into the ships and vice versa.

The piers as designed embraced no novel features, following the standard New York Dock Department practice with reinforced concrete deck finished with 2-inch asphalt block for wearing surface. On all of the piers double track railroad could be installed inside the sheds, the 209 foot piers being designed with two tracks on each side of the shed, the floor of the shed being on the same level as the car floor. The pier decks were designed for a live load of 500 pounds per square foot and the second floors for 400 pounds for the 209 foot sheds and 350 pounds for the 130 foot. The plans called for full equipment according to New York practice.

The designs of these piers were criticized vigorously during the year on the score that they were too narrow, that they failed to provide railroad track facilities on the piers outside of the sheds except for the wider piers, and the general lack of modern and adequate cargo handling and mechanical equipment. On the other hand the designs were vigorously defended by the New York City Dock Department, which claimed that they were especially applicable to local conditions and the important consideration governing the port and its shipping. Description of the piers and discussion of their merits and demerits may be found in *Engineering News-Record*, Vol. 84, No. 22, p. 1047, and Vol. 85, No. 4, p. 160.

Much of New York's water front was marked by inadequate or obsolete piers and accordingly the replacement of a number of old North or Hudson River piers by new ones was determined by the city administration. The Sinking Fund Commission authorized the expenditures of funds to supplant 32 antiquated piers between Vesey and Perry streets on the lower part of Manhattan Island with 18 new piers. Most of the old ones were of 30 years' standing and were narrow with

narrow slips. It was decided that two of the new piers should be 100 feet wide, seven 150 feet wide, and nine 125 feet wide. They were to be from 900 to 1025 feet in length.

Later in the year the Department of Docks and Ferries of New York announced that it contemplated the construction of three piers each 700 to 1000 feet long and 250 feet wide at Owls Head Bay, on the Brooklyn shore just inside the Narrows.

Still other steps in the development of New York port facilities only this time on the New Jersey shore was the announcement made by the Cunard Steamship Co., Ltd., that it proposed to undertake the construction at Weehawken, N. J., on the Hudson River about opposite 36th Street, New York City, of a group of eight piers of 1000 foot length and one shorter pier. The pier and slip widths and exact details of handling equipment or of layout were not given out definitely, but pier widths of 150 feet with full width sheds and a multi-story marginal warehouse were understood to be elements of the scheme. The new group of piers, it was announced, were to be used only for freight ships the passenger terminals remaining at the Chelsea piers of New York City.

PORT DEVELOPMENT AT BALTIMORE. The Port Development Commission of Baltimore, Nov. 8, 1920, adopted nine general requirements as a statement of policy in undertaking the harbor development work for which \$10,000,000 was available and which was required by the commercial and shipping growth of the city. As these requirements represent the modern tendency of enlightened engineering and shipping progress they may be quoted in full as follows:

It shall be the policy of this commission

(1) To develop the port of Baltimore in accordance with a definite and comprehensive working plan, based on the best modern conception of port design. This plan shall serve as a guide for each step in the development in order that the completed whole may be harmonious in the correlation of its individual parts.

(2) To consider the elemental function of a pier the furnishing of a safe means for the expeditious and economical interchange of freight between land and water carriers and not merely the furnishing of a shelter for a ship so as to insure stability during the process of loading and unloading.

(3) To make improvements for the broad purpose of the widest possible use and benefit of the port as a whole and not solely for the narrow purpose and restricted use by meeting only present conditions or the special requirements of prospective lessees. All structures shall be readily adaptable to future changes in kinds of cargoes, methods of operation and special requirements of future lessees.

(4) To obtain expeditious movement of cargoes between land and water carriers and a maximum of economy by constructing piers large enough to hold the full contents of vessels which can tie up to them, and by making proper provision for the installation of mechanical appliances and facilities to move these contents to or from the piers with the least possible delay to vessels.

(5) To locate all improvements preferably in places where it is possible either now or at some future date to make railroad connections with all the trunk lines entering the city, and to locate warehouses, wherever practicable, so that there

will be the shortest possible movement of cargoes from the carriers to the place of storage.

(6) To provide the space and supports for ample railroad tracks on both the inside and outside of piers so that these tracks may be added at any time required.

(7) To construct transfer sheds with at least two stories wherever the business of the lessee warrants such construction, and when only one story is required at time of construction, to design the foundations and the framework in such a manner that an additional story can be added at any future date with the least possible interference with the operations on the first story.

(8) To build all structures with the primary conditions of stability, permanency, and economy.

(9) To have in view

(a) The ultimate concentration of terminals and shipping facilities so that the combined railroad trackage may be made accessible to all piers, and

(b) The unification of the administration of the terminals and shipping facilities so as to assure coördination and coöperation of all interests.

As soon as the Port Development Commission could find lessees for the proposed piers \$10,000,000 would become immediately available for their construction and \$10,000,000 addition would become available later, in accordance with a vote for a bond issue aggregating \$53,000,000. It was expected that work would start early in 1921.

NEW ORLEANS INNER HARBOR. During the year work was continued actively on the construction of the New Orleans Inner Harbor begun in 1918. The principal part of this project was the navigation canal, connecting the Mississippi River with Lake Pontchartrain. The work here in 1920 was considerably more than half completed, and attention was being specially directed to the construction of the lock and cutting the approach from the river.

The canal connecting river and lake is approximately 28,000 feet long, and was planned eventually to have a depth of 30 feet, a bottom width of 150 feet, and a water level width of 330 feet. The lock which provides for the difference in level of the lake and the river, was designed with a usable length of 640 feet, a width of 75 feet, and a depth over sills of 30 feet. Four lift bridges cross the canal, one of which is supported on the lock substructure, while a large concrete siphon carries one of the city's main drainage outlets. The estimated total cost of the project was \$19,500,000. The general plan of the canal was discussed in the *YEAR BOOK* for 1918, p. 113.

MILWAUKEE HARBOR DEVELOPMENT. In the general movement for the improvement and development of harbor facilities among the cities on the Great Lakes, Milwaukee, Wis., was conspicuous in 1920. The Harbor Commission with competent engineering advice adopted comprehensive plans for a complete revision of the port facilities to be executed at the rate of about \$500,000 per year. As provided by law, these plans were to be submitted to the Common Council for approval. It was proposed here to develop an outer harbor, which has not hitherto existed at Milwaukee, and add terminal facilities on the outer shore of the inner harbor at Kinnickinnic Bay. This would require the reclamation of land on Jones Island, much filling

behind a new bulkhead north of the harbor entrance, and construction of additional breakwater to protect the outer harbor.

The radical character of these proposals may be realized when it is stated that there were no wharves or terminals on the Milwaukee lake front, but that the shipping of the port was handled along the rivers emptying into the lake there. Entrance to these rivers was protected by parallel jetties and by a lake breakwater northward of the entrance.

The new development contemplates the extensive building of quays, car ferry slips, coal pock-ets, grain elevators, piers, and storage areas completely connected by terminal railways. The piers were all to be fitted with modern mechanical freight handling equipment. The work in progress in 1920 consisted in completing a rubble mound at the harbor entrance behind which filling could be done, and a revetment along the inner side of Jones Island.

SEATTLE PIER CONSTRUCTION. During the year there was built at Seattle, Wash., a new pier 365 wide and 2560 feet long at an estimated cost of \$2,500,000, as an extension of the Smith's Cove improvement of the Port of Seattle Commission. At this point there had been operated by the city for five years Pier A, 310 feet wide and 2543 feet long, over which in 1918 808,000 tons of freight had been handled with a net profit of \$378,000 to the Port Commission. In 1919 the freight taken care of at this pier totalled 1,100,000 tons. Although six large deep sea vessels could be laid alongside of Pier A, it was found that additional port facilities were required, and accordingly the construction of Pier B, adjoining and across a slip 350 feet wide whose dimensions are given above was decided upon, the plans being prepared after a careful analysis of experience and local conditions and a study of pier construction elsewhere. The main design of the new Pier B involved a central portion of 215 feet filled in solid, the material being pumped by suction dredges from the slips alongside the pier. This fill contained about 1,000,000 cubic yards. (Another 1,000,000 cubic yards was used to fill a waterfront street connecting the Smith's Cove Terminal with Seattle's business district.) A 75-foot wharf was built on either side of this central fill whereby it is possible to maintain a 35-foot depth of water at low tide without the use of a retaining wall. The tidal variation of the harbor at Seattle is 17 feet so that there is a total of 52 feet of water at high tide alongside the pier. The slope from the top of the fill to the channel bottom is covered by a 2 to 3 foot thickness of rock to protect it from wave action. The wharf was constructed entirely of creosoted piles and timbers, a total of 12,000 piles being used.

In the design of the new pier particular attention was paid to the arrangement of railway track so that freight cars could be readily switched in proximity to any ship alongside. There was also a complete mechanical handling equipment and storage or transit sheds, portions of the latter located near shore being arranged for passenger accommodation on their second floor to which access had by an overhead bridge and viaduct, obviated street and track crossings.

SECTIONAL FLOATING DOCK. During the year there was completed for service at Pensacola, Fla., a sectional floating dry dock made continu-

ous by interlocking. The dock was built of timber and was designed for a normal lifting capacity of 5000 tons. It was capable of handling a maximum load up to 6000 tons, for each of the five sections had a reserve buoyancy of 1200 tons. The dock had a length over all of 380 feet, an extreme width of 94 feet, with a width of 78 feet 2 inches between the wings at top and 74 feet 2 inches at deck level. The pontoons were 12 feet deep, and could be submerged to give 18 feet of water over the top of the 42 inch keel blocks.

The advantage of a sectional dock is that any one section can be docked in the remaining sections for painting and repairs, and in the present structure by a system of interlocking connections the longitudinal trusses of the wing walls of each of the five sections are made continuous for the length of the entire dock, the various sections being united into a rigid unit. The flotation of the dock is obtained by means of 20 vertical 10-inch centrifugal single suction pumps of the impeller type, driven by electric motors, there being one pump in each of the four transverse compartments in each section. The pump and motor equipment is sufficient to raise the dock with its load of 5000 tons in 45 minutes. Current is supplied from the shore and there is a single switch house on the pier in proximity to the dock-master's station.

TORONTO HARBOR IMPROVEMENT. In 1912 an elaborate scheme for the development of the harbor at Toronto, Ontario, was determined on to cost about \$20,000,000. While the work was begun and was prosecuted more or less in spite of the war nevertheless the latter work was principally in the direction of reclaiming ground for munitions factories. The original development as proposed in 1912 was divided into three parts. To the west of an island which protects the center part of the city from Lake Ontario the shore front was to be protected by a paralleling breakwater and developed for park, amusement and residence purposes.

The water front facing the bay was to be developed by the construction of wide piers on which industrial plants were to be built. Portions of the island were to be filled in with material dredged from the bay which was to have a depth of 38 feet. Between the island and the city, the former marshy area known as Ashbridge's Bay was to be filled in and developed for industrial purposes. Here a ship channel 400 feet wide would afford access to a 1100 foot square turning basin in the center of the district. Boulevards were planned around the island from one part of the city to the other, and the west end of the island separated from the lake by small lagoons would give pleasing sites for summer residences. Progress was made in 1920 in many portions of the general work which also involved a future location of the railways both with regard to the new union station and the development of well defined transportation centres. The principal objects of work were the completion of the west breakwater, extending the central pier district, completing the turning basin, and developing certain park and recreation facilities.

MARSEILLES HARBOR IMPROVEMENT. The development of the Port of Marseilles and the construction of the Rove Ship Tunnel, projects planned before the war but interrupted in their execution until the close of hostilities represented some of the most important engineering work

in progress in France in 1920. The City of Marseilles which is the chief port of France is located at the head of an excellent harbor near the mouth of the Rhone River, and at the terminus of the great Paris-Lyons-Marseilles Railway, serving all interior France as the principal port for the large Mediterranean trade. In addition, Marseilles has to a large extent served as a port for Switzerland also whose trade later was directed to Genoa in large measure. As a result of this commerce since 1910 the equipment of the port had been wholly inadequate to serve the increase of shipping, and while from 1900 to 1913 the area of the quays and docks was increased some 19 per cent the total traffic of the port increased 90 per cent. The imports of Marseilles, which suffered of course during the war, in 1916 were 5,704,903 tons and its exports 1,493,535 tons. The chief traffic is naturally import traffic with the Mediterranean ports, comprising 36 per cent of the total, of which 64 per cent is with Africa. Import traffic with the United States, England, and India comprised 11, 20, and 11 per cent respectively of the total.

The port and harbor includes a number of main features most of which were undergoing improvement in 1920, several important works being practically completed. These features were summarized in an interesting paper by Professor Thorndike Saville in *Engineering News-Record* for Nov. 25, 1920. They are referred to below:

1. The Grand Jetty. This is a concrete sea wall and dike forming an outer barrier, which runs parallel with the shore and serves to protect the docking basins, of which it forms one side. The sea wall itself acts in part as a dock, and is extended by a dike of masonry blocks to form a fore-port to the basins. As the latter are developed the jetty must be increased in length and its terminal quay was nearing completion in 1920.

2. The Interior Basins. These are large areas protected by the Grand Jetty, and flanked by quays with freight handling machinery. They are large enough to accommodate and allow to maneuver the largest transatlantic liners entering the Mediterranean. One of the basins, named the President Wilson Basin, was virtually completed in 1920, increasing the water area of the port by some 100 acres and the quay length by about 3600 linear feet, or an increase in the port capacity of 15 per cent. Further basins to be completed in 1924 or 1925 were projected.

3. A coast-wise canal from the interior basins and port to the Rove Tunnel with a minimum depth of 3 meters (9 feet 10 inches). This allows standard 600 ton river barges to come alongside the quays and proceed directly to the Rhone River.

4. The Rove Tunnel. This project which was described in the *YEAR BOOK* for 1915 and 1916 is one of the largest single span tunnels in the world, being designed to permit river barges to proceed direct from Marseilles to the Rhone, and thence to the interior of France. Work was in progress in 1920 and the completion of the tunnel in 1924 was looked for.

5. The Development of the Etang de Berre. A great inland sea, adjacent to Marseilles, but separated from it by the Rove Hills. It was to be connected with Marseilles by the Rove Tunnel, and with the sea by the Straits of Martigues where a channel 270 feet wide and 46 feet deep

would be dredged. It was planned to develop here a supplementary port for Marseilles, a barge terminus for river traffic, and a protected naval base.

6. Canal from Marseilles to the Rhone. This canal commenced by Napoleon I, passes along the coast to the Rove Tunnel, through the Etang de Berre and thence to the Rhone at Arles. It forms a direct water highway from Marseilles to Lyons and interior points, and is destined eventually to make possible water communication from Marseilles to Switzerland through Lake Geneva, consequently its deepening to a maximum of 8 feet and the construction of new locks at Arles was in progress.

SYDNEY, NEW SOUTH WALES. There were under construction in 1920 increased railway and harbor facilities for Sydney, New South Wales, at Darbor, west of the city and at the head of the landlocked bay on which the city is situated. In addition to reclaiming by filling 23 acres at the inner end of Darling Harbor, there were in course of building double-deck steel and concrete freight sheds on long piers for ocean steamship service, to be served by a marginal railway connecting the city terminals with the freight belt line. An important terminal facility also under construction was a grain elevator with a storage capacity of 6,500,000 bushels located at Glebe Island. The railway facilities were being properly coordinated with the port development and in order to keep switching movements clear of the harbor work a freight yard with capacity for 3000 cars was built at Rozelle, the junction of the lines to the docks and to the grain elevator.

DODECANESIA or the **DODECANESE**. (Greek for Twelve Islands). A group of islands lying off the southwest coast of Asia Minor. See GREECE.

DODGE, HORACE E. Millionaire automobile manufacturer died at Palm Beach, Fla., December 10. After the death of John F. Dodge, in January, he was the sole head of the Dodge Brothers' Automobile Co. He was born in Niles, Mich., and acquired the knowledge of machinery in the shop of his father, an iron-worker. He worked as a journeyman machinist in several cities of Michigan, and later with his brother, entered the establishment of Henry Ford. The Dodge Brothers made a great success with the so-called Dodge car.

DODGE, JOHN F. Millionaire automobile manufacturer died in January. At the time of his death he was head of the firm of Dodge Brothers. He was born in 1866 and worked with his brother as a journeyman machinist until they went into the Henry Ford establishment. The Dodge car won a great success some few years ago. The Dodge Brothers had some 18,000 men working under them.

DOMINICA. See LEEWARD ISLANDS.

DOMINICAN REPUBLIC, or **SANTO DOMINGO.** A West Indian state occupying the eastern and larger portion of the island of Haiti; capital, Santo Domingo.

AREA AND POPULATION. The area is estimated at 19,332 square miles and the population was estimated in 1918 at 955,159; other estimates are much lower, placing the population on the aver-

age at about 600,000. The inhabitants are of mixed race, chiefly of European, African, and Indian blood, but also comprising some Creoles of Spanish descent. There are many Turks and Syrians, for the most part in the city of Santo Domingo. The language of the people is Spanish, but there are a few descendants of American negro emigrants who speak an English patois, and along the frontier the Haitian French patois is spoken. Santo Domingo in 1919 had a population of 26,812 and Santiago de los Caballeros a population in 1917 estimated at 14,744. Other estimates place the population of these two cities much higher and the exact number is uncertain. Another large town is San Pedro de Macoris, with a population variously estimated at from 10,000 to 20,000.

EDUCATION. In 1919 the number of pupils in all the schools was estimated at 82,000 as compared with 51,585 in 1918, and there were 868 public schools of which six were secondary and with a teaching staff of 1468. Various measures have recently been taken under the military government to reform the methods of education, including the introduction of manual training or agricultural teaching in the public schools.

PRODUCTION. The country is primarily agricultural and manufacturing is carried on only on a small scale. The leading crops are sugar, cacao, and tobacco. The chief industry is the making of cane sugar. In 1918-19, the production amounted to 1,715,197 bags of 320 pounds each, valued at \$19,020,467. The selling prices in 1918 reached the highest point on record, averaging a little less than five cents a pound. The great bulk of the crop went to American ports for transshipment to Canada, England, and France. The chief port for the export of sugar is San Pedro de Macoris. As to cacao the average crop yields about 50,000,000 pounds. In 1918 it amounted only to 39,582,900 pounds, being one of the smallest harvested in recent years. Besides sugar and cacao there is a considerable production of tobacco leaf and these three products along with coffee and honey constitute the main articles of export. The leading imports are cotton, rice, foodstuffs, machinery, and fibres. The sugar crop of 1918-19 was 171,519,737 kilos, worth 19,020,467 pesos (peso equals \$1), coming in from various parts of the country, as follows: San Pedro de Macoris, 107,374,982 kilos; Santo Domingo, 35,723,655 kilos; Seybo, 20,459,936 kilos; Azua, 6,411,894 kilos; and Puerto Plata, 1,549,270 kilos. The tobacco crop for 1920 was estimated at 60,000,000 pounds.

COMMERCE. The imports of merchandise in 1919 were valued at \$22,019,127 and the exports at \$39,601,892, a considerable gain over the preceding year especially in the exports owing to the scarcity and consequent high price of sugar in the United States. In 1919 the United States supplied 82 per cent of the imports and received over 61 per cent of the exports. In respect to the imports, the United Kingdom held the second place and France the third. The chief imports in 1919 were iron and steel manufactures, cotton and cotton manufactures, rice, and wheat flour, and the chief exports were raw sugar, cocoa, and tobacco. The following tables show the value of imports and exports by countries for the calendar year 1918-1918-1919.

Countries	1918	1918	1919
IMPORTS			
United States . . .	\$5,769,061	\$17,037,041	\$18,113,304
Cuba	7,852	121,773	152,174
United Kingdom . .	730,191	529,351	346,217
France	274,318	99,084	171,900
Germany	1,677,833	.....	2
Italy	173,105	34,716	77,580
Spain	210,781	48,795	125,931
Other countries . .	429,737	1,865,392	3,032,019
Total	\$9,272,278	\$19,736,152	\$22,019,127
EXPORTS			
United States . . .	5,600,768	18,170,291	24,040,059
United Kingdom . .	241,810	412,781	223,352
Cuba	27,536	132,074	162,549
France	887,907	681,880	4,051,631
Germany	2,068,884	.....	.....
Italy	20,430	5,153	4,685
Spain . . . . .	.....	793,400	634,972
Canada	1,594,118	595,560	6,421,231
Other countries . .	528,994	1,581,205	4,123,410
Total	\$10,469,947	\$22,372,344	\$39,601,892

HISTORY. In October a report by the commander of the United States Medical Corps indicated great improvement in financial, educational, and sanitary affairs. It was said that since the American military government was established in November, 1916, the misrule, corruption, and disorder that had prevailed hitherto and the rapid increase in the foreign debt had been largely checked. There was a surplus in the treasury of \$3,200,000 and the interest on the bonded debt of \$20,000,000 had been regularly paid and it was expected that the whole debt would be liquidated in 1925. A fair and efficient system of taxation had been established. As to schools, the attendance in 1916 had been only 18,000 and was given in 1920 at 120,000, while the number of school houses in the country districts was reported to have increased from 30 to 647. Other improvements claimed by the administration were the sanitation of every district, the establishment of charity hospitals and of a leper colony, and the organization of vital statistics. On December 24 the President ordered the relaxation of military rule as a step toward the return of the Dominican Republic to complete independence and directed at the same time Admiral Snowden to issue a proclamation to the following effect: "Inasmuch as it had been the intention of the United States to withdraw its aid as soon as the purposes of its intervention had been attained and as these purposes had now been accomplished, the Government of the United States took prompt steps to withdraw. A commission of Dominican citizens would be appointed to propose amendments to the constitution and a revision of the law, which upon approval by the American military government in occupation would be submitted successively to a constitutional convention and to the congress of the Dominican Republic." It went on to say that for some time past there had been complete security in the Republic and for the first time in many years the people had been able to go about their work without fear of disturbance.

The account of the American occupation will be found in preceding YEAR BOOKS, but a brief summary here may be convenient. The United States government interfered in the affairs of the Dominican Republic in November, 1916, with the avowed purpose of restoring order and the protection of life and property. It declared at that time in a proclamation dated Nov. 29, 1916, that it had no design of destroying the sovereign-

ty of the Republic. Conditions, however, were so disturbed as to imperil the lives and property of natives and foreigners alike. Moreover, the Dominican government had repeatedly failed to observe its obligations to the United States under the treaty of 1907. While the American government had tried to aid the Dominican government, the latter had not adopted the measures suggested. The financial situation of the Republic was very unsatisfactory. Its account was overdrawn and the salaries of employees were greatly in arrears. The American military government took charge of the finances, paid all the debts, and met all the expenses of the government. In the course of four years of occupation the finances had been restored to order and the general condition was as above indicated. In 1907 the treaty between the two governments had provided that the customs revenues of the Dominican Republic should be collected by a receiver appointed by the President of the United States in order to guarantee the payment of interest and of the debt, and the Dominican government agreed not to increase its public debt without the approval of the American government. For a time conditions improved, but revolutionary disturbances caused the Dominican government to increase its debt in order to raise funds for the restoration of order. It thus violated the treaty obligation. In 1915 a new treaty was formed providing for the continuance of American control over the customs and for the control by Americans over the constabulary. The Dominican government refused to agree to this and at about the same time the Dominican Minister of War, Arias, headed a revolutionary movement. The revolutionists got possession of the fortress of the city of Santo Domingo, while the loyal forces continued to control the country surrounding the capital. Civil war was beginning when with the consent of President Jimenez, naval forces of the United States were landed in the Republic. The Dominican president soon afterwards resigned and American marines were landed at several ports. A new Dominican president was elected, but the United States would not recognize him because he refused to accept a treaty like that proposed in 1915 which would guarantee the maintenance of order and the honest administration of the finances. In the deadlock that followed, the United States government ordered the naval officer in command to assume the direction of affairs and as the Dominican government persisted in its refusal the American government proclaimed through Captain H. S. Knapp of the United States Navy, Nov. 28, 1916, the establishment of temporary military government. The withdrawal of the American troops pursuant to the policy above described, was under consideration at the close of the year. The Secretary of the Navy announced, December 27, that several months would pass before the American marines could be withdrawn. At that time, a committee was planned for the revision of the laws and for the framing of new regulations according a share in the government to the inhabitants, and it was announced that Rear-Admiral Snowden, the naval governor, would name the members of the committee in accordance with the recommendations of the American government.

DON, WILLIAM GERARD. British surgeon, died, July 27. He was born Jan. 10, 1836, studied

at Aberdeen and Edinburgh and took his medical degree from the University of Edinburgh in 1857. After a brief service in the navy he entered the army and served in the Indian Mutiny, winning a medal and being mentioned in despatches. He was engaged in fitting out hospital ships for the Egyptian expedition of 1882. For 17 years he served as the medical officer on the London recruiting staff. He wrote largely for medical and other periodicals and published a number of books on genealogy and some archaeological notes on early Scotland.

DONCASTER, LEONARD. British zoölogist, died, May 28. He was born at Sheffield, Dec. 31, 1877, and graduated with honors at Cambridge. He lectured on zoölogy at Birmingham University, 1906-15, and was a fellow of King's College, Cambridge, in 1910. In 1915 he received the Trail medal of the Linnæan Society. He published numerous papers on zoölogical subjects in the important medical journals and wrote *Heredity in the Light of Recent Research* (1910); and *The Determination of Sex* (1914).

DOUGHERTY, J. HAMPDEN. Lawyer, died at Bayonne, N. J., January 12. He was born in New York City, Dec. 17, 1849, and graduated at the college of the City of New York in 1871; studied law and medicine at Columbia and began the practice of law in 1874. After 1908 he practiced alone. He was prominent in many movements for reform and frequently appeared before commissions of investigation. Under Mayor Low he was commissioner of water supply, etc., and he was a member of the Charter Revision Commission in 1907-1908. He was active in the campaign to secure workmen's compensation in New York State and the ratification of the income tax amendment. Among his writings may be mentioned, *The Electoral System of the United States* (1906); *Power of Federal Judiciary over Legislation* (1912), and *Constitutional History of New York State* (1911 to 1915).

DOURINE. See VETERINARY MEDICINE.

DOWNHAM, WILLIAM HAYES FISCHER, FIRST BARON. British official, died in London, July 2. He was born in 1853 and educated at Oxford, where he graduated in 1876, with honors. He went into politics as a Conservative and became private secretary to Sir Michael Hicks Beach and afterwards to Mr. Balfour. In 1892 he entered Parliament where he continued to sit until the end of 1910 with the exception of a brief period following the election of 1906. He was Junior Lord of the Treasury, 1895 to 1902; financial secretary to the Treasury, 1902-03; leader of the Municipal Reform Party in the London County Council in 1909-10; and Chairman of the Council in 1919.

DRAINAGE. See RECLAMATION.

DRAKE UNIVERSITY. An institution of higher learning situated at Des Moines, Iowa, founded in 1881. Enrollment in 1920 was 2130 and there were 83 members in the faculty. President, Arthur Holmes.

DRAMA, AMERICAN AND ENGLISH. With the recession of the war into the past, the theatre in English-speaking countries returned in 1920 toward its normal condition, slowly and falteringly in England, but with such rapid strides in America that the season 1920-1921 gave promise before it was half over of being the most brilliant in recent years. While the London

stage seemed still to be suffering from the retrenchment due to war and labor difficulties, the American theatre took up the course of its development where the war had halted it and went forward, with an assurance hardly to be expected after the comparative indifference of the first year following the armistice, under such differing stimuli as the emergence of a new native playwright of the first rank, Eugene O'Neill; the ambitious projects of Arthur Hopkins; the discovery by the English-speaking stage of Jacob Ben-Ami, who seems destined to follow his record in the Yiddish theatres of the East Side with a brilliant career in his new-found tongue; the fresh impulses and vitality of the so-called new stagecraft as typified by Robert Edmond Jones, Norman-Bel Geddes, and others; the growing importance and influence of various institutional and experimental groups such as the Theatre Guild, the Provincetown Players, the Neighborhood Playhouse, and the Jewish Art Theatre, in New York, and scores of more or less significant little theatres scattered all over the country; and finally the example accorded by the importation of some of the best plays, both old and new, of John Galsworthy, Bernard Shaw, and St. John Ervine.

Few of the forces operating in the American theatre or movements either parallel or of equal moment distinguished the activities of the British stage. Enormous rents in the established theatres stifled almost everything but the most ordinary commercial ventures, forcing Nigel Playfair to continue to operate in the theatre in Hammer-smith where John Drinkwater's *Abraham Lincoln* had found haven the year before, while Robert Atkins rehabilitated the Old Vic for a season of Shakespeare and the classics and J. B. Fagan remodelled the Court Theatre for the same purpose. Barrie and Galsworthy returned to the ranks of producing playwrights with *Mary Rose* and *The Skin Game*, respectively; Lennox Robinson, of the Abbey Theatre, Dublin, added to his reputation with a new comedy, *The White-Headed Boy*; the Little Theatre became London's Grand Guignol, devoted to unusual one-act plays; Basil Dean came to the fore among the younger producers; and Moscovitch left New York's East Side to win a British name for himself in Shylock and other rôles; but for the most part the West End theatres were content with minor plays and undistinguished revivals.

Probably the most distinctive event in the American theatre was the definite arrival of Eugene O'Neill in the front rank of contemporary native playwrights, an event marked by Richard Bennett's production of his first full length tragedy, *Beyond the Horizon*, and reenforced later in the year by the disclosure of *The Emperor Jones* and *Diff'rent* on the stage of the Provincetown Players. O'Neill's one-act plays had been introduced by this pioneer group to a small public, but until *Beyond the Horizon* was presented it was uncertain whether he could master the more exacting technique of the longer form. The general verdict of approval, backed up by the award of the Columbia University Pulitzer Prize of \$1000 for the best original play by an American performed during the season in New York, dispelled any doubts on that point, and the few who hesitated to acclaim O'Neill on account of a certain looseness of construction in *Beyond the Horizon*, fell into line with the dis-

closure of still more remarkable gifts in his later plays, for *The Emperor Jones* revealed an imaginative strain more sure and more original than the American drama had yet produced, while *Diff'rent* proved its author to be possessed of a command of dramatic realism unsurpassed in the English tongue. Nearly all of O'Neill's plays are on or by or of the sea, the heritage of his own life on the wave. Most of them are tragic in dénouement. But the outstanding individual characteristic of O'Neill's work is the lyric quality of his dialogue, whereby his speech must be spoken to attain its full effect, a quality which allies him more nearly with Synge than any other modern playwright.

The movement toward a simpler, more appropriate and more eloquent mounting of plays, which has come to be known as the new stagecraft, received definite impetus and encouragement in the course of the year. Perhaps the most notable single event of the kind was the setting which Robert Edmond Jones designed for Arthur Hopkin's revival of *Richard III*, with John Barrymore in the leading rôle. Jones conceived the old chronicle play as a panorama of scenes with the massive bulk of the Tower of London looming up behind them all, a device which knit these scenes together in the "stylized" manner of Reinhardt and the Russians. The settings which Jones designed for Walter Hampden's production of Percy MacKaye's *George Washington* were in this same manner, and other examples included the work of James Reynolds for *The Greenwich Village Follies* of 1920, of Rollo Peters for William Faversham's production of *The Prince and the Pauper*, of C. Raymond Johnson for Maurice Browne's revival of Euripides' *Medea*, and of Norman-Bel Geddes for the revival of the light opera, *Erminie*.

The effort to improve the standards of plays and production outside the commercial theatre likewise encountered encouraging success. The Theatre Guild, successor to the Washington Square Players, continued its second season at the Garrick Theatre, New York, and began its third with a record fully upholding its earlier prospects and accomplishments. In the later winter and spring, Tolstoy's *The Power of Darkness* in an inferior production was added to the repertory, but this failure was retrieved by a masterly presentation of *Jane Clegg*, by St. John G. Ervine, whose *John Ferguson* had previously established the Guild on firm ground both financially and artistically. Strindberg's *The Dance of Death* was ably presented for subscribers only. The new season was opened in the fall with an interesting production of David Pinski's pungent satiric comedy, *The Treasure*, which was followed by the Guild's most ambitious project, the world premiere of Bernard Shaw's brilliant comedy of war-time England, *Heartbreak House*. If the Guild had done nothing else but this, it would have justified its existence. Other institutional and experimental theatres which did notable work in New York were the Provincetown Players, the Neighborhood Playhouse, and the Jewish Art Theatre. The Provincetown Players remodelled their little auditorium in Macdougall Street, New York, installing a *kuppelhorizont* or plaster horizon similar to those of the German stages, and commanded wider attention than ever before with their productions of O'Neill's plays, *The Emperor Jones* and *Diff'rent*. The Neighborhood Playhouse likewise enlarged its clientèle

through the first American production of John Galsworthy's *The Mob* at the hands of a visiting professional company and through the resident company's performance of Andreyeff's *The Beautiful Sabine Women*. The Jewish Art Theatre, at the old Garden, continued through the early months of the year the excellent work which had marked its opening in the fall of 1919, adding Peretz Hirschbein's pastoral fantasy, *Green Fields*, to its repertory. The loss of Jacob Ben-Ami to the English-speaking stage, however, was not compensated in the fall by the arrival from Germany of Rudolph Schildkraut as a new leader for the company, and the standards of acting and production and the choice of plays were not maintained through the later months of the year, although Schildkraut's Shylock attracted deserved praise. The Little Theatre movement progressed by leaps and bounds all over the country with the formation of many new community groups, and although much of the work was crudely amateurish in nature, the underlying impulses pointed to a dramatic independence which bodes well for the future.

The arrival of Jacob Ben-Ami on the English-speaking stage, already referred to, was the year's event in the discovery of fresh acting talent for the American theatre. This young Russian Jewish player had come to New York in 1914, and had struggled against bitter odds in the Yiddish theatres of the East Side. At the Jewish Art Theatre he was finally able to put into practice some of the high ideals which he had brought from the Russian theatre and from that vantage ground he was drawn by Arthur Hopkins to a wider public on Broadway. His first play in his new tongue was Sven Lange's *Samson and Delilah*, of the Danish post-Ibsen school, distinctly inferior to his own powers but affording a bridge from Yiddish to English inasmuch as it was one of his most successful items in the repertory at the Garden. The intense tragic power and imaginative gifts of this player give him every assurance of a place in the American theatre comparable only to that which Richard Mansfield held and which no one in the meantime has challenged except John Barrymore. Barrymore added to his own reputation with his picturesque and incisive characterization of Richard III, but illness took him temporarily away from the stage mid-year. Many of the younger players advanced their reputation appreciably, but the only other discovery of unsuspected talent of great proportions was that of Charles S. Gilpin, a negro, whose astonishing impersonation of the title rôle in O'Neill's *The Emperor Jones*, fulfilled that play's inherent possibilities.

A still greater gap yawned between New York and the rest of the country, and the problem of "the road" assumed discouraging aspects. Chief among the causes for this gap was the sharp increase in railroad rates which made it almost prohibitive to transport large companies and elaborate productions from city to city. The result was not only a decrease in the number of traveling productions but a deterioration in the standards maintained, to which the other increasingly expensive factors of play production contributed. Managers, who used to force the run of plays in New York in the hope of recouping on the road had to devise means to make the New York engagement pay for itself and prices of admission, already expanded, were forced still

higher. The only relief from this impasse, for which the vogue of the motion picture in the smaller cities is partly responsible, seemed to be a return to pre-war financial conditions or the development of community and repertory theatres in the larger cities and even in the smaller communities where important plays may be presented simultaneously with their run in New York. Relations between the actors and the managers, which culminated the previous year in the Equity strike, were unruffled, proving the soundness of the conditions which the strike achieved. Something of a flurry was caused by the announcement of certain motion picture corporations that they would enter the theatrical business and produce plays which would be primarily suited for later use on the film, but the general course of the theatre did not seem to be greatly influenced thereby.

Aside from those plays already mentioned and characterized, there were several new plays of native authorship admirable in their particular genres. Porter Emerson Browne, author of *A Fool There Was*, and other conventional pieces of dramatic carpentry, revealed an unsuspected satiric and whimsical gift in *The Bad Man*, a melodramatic comedy of the Mexican border with an intriguing infusion of ethical contrasts between the civilized and the bandit point of view in which Holbrook Blinn impersonated a replica of Pancho Villa. Frank Craven showed himself to be a keen and faithful observer of native small town types in writing and acting in *The First Year*, a worthy successor to his earlier comedy, *Too Many Cooks*. Gilda Varese is another player who composed her own piece, *Enter Madame*, a comedy of the artistic temperament, coming into her own thereby after a discouraging series of attempts to find a rôle suitable to her peculiar gifts. *Enter Madame* served likewise to introduce a new producing manager of taste and perspicacity in the person of Brock Pemberton, who obtained his schooling under Arthur Hopkins. *Mama's Affair* was an amusing and expert comedy which gave promise of a fresh talent in our theatre until its author, Rachel Barton Butler, died suddenly in the autumn. *The Bat*, written jointly by Mary Roberts Rinehart and Avery Hopwood, was the most shrewdly contrived mystery melodrama of the year.

Among the abler plays of the year were: *Big Game*, an intense and well-built western melodrama by Willard Robertson and Kilbourn Gordon; *He and She*, a comedy on the place of woman in modern life by Rachel Crothers, in which the author enacted the leading rôle; *The Hottentot*, a typical William Collier farce in which Victor Mapes collaborated with Mr. Collier in composition; *Sophie*, a smart and sophisticated comedy of eighteenth century France, by Philip Moeller with Emily Stevens in the title rôle; *Not So Long Ago*, a romantic comedy of the New York of a generation ago, by Arthur Richman; *Footloose*, a play made by Zoë Akins from *Forget-Me-Not*, a story, by H. C. Merivale and F. C. Grove, with Emily Stevens in the rôle of Stephanie, Marquise de Mohrivart; *Martinique*, a picturesque romance of the French West Indies, by Laurence Eyre; *Come Seven*, a comedy of negro life made by Octavus Roy Cohen from his own short stories; *Crooked Gamblers*, a Wall Street melodrama, by Samuel Shipman and Percival Wilde with Taylor Holmes in the leading rôle; *Opportunity*, another Wall Street play by

James Crane; *The Lady of the Lamp*, a curious blend of Broadway banalities and fascinating Chinese legend, by Earl Carroll; *One*, Edward Knoblock's latest play, concerning dual personality and having Frances Starr in a double rôle; *Little Old New York*, a reconstruction of the New York of a hundred years ago by Rida Johnson Young; *Call the Doctor*, David Belasco's production of an amusing study of domestic difficulties, by Jean Archibald; *Welcome Stranger*, a comedy of the struggles of a Jewish invader of a small town, by Aaron Hoffman; *Immodest Violet*, a satiric comedy, by David Carb; *The Tavern*, a burlesque on melodrama, by Cora Dick Gantt and George M. Cohan with Arnold Daly in the leading rôle; *Three Live Ghosts*, an after-the-war farce, by Frederic S. Isham; *The Meanest Man in the World*, a comedy, by George M. Cohan, in which the author himself played; *The Unwritten Chapter*, a play, by Samuel Shipman and Victor Victor, dealing with the Revolutionary War character of Haym Solomon; *Just Suppose*, a sentimental and imaginary episode in the visit of the Prince of Wales to the United States, by A. E. Thomas; *Bab*, a dramatization by Edward Childs Carpenter of the "sub-deb" stories of Mary Roberts Rinehart; *Rollo's Wild Oat*, a farce by Clare Kummer; *Cornered*, a comedy, by Dodson Mitchell with Madge Kennedy in the leading part; and *Miss Lulu Bett*, Zona Gale's dramatization of her own novel.

Other plays of the year were: *No More Blondes*, by Otto Harbach; *The Ruined Lady*, by Frances Nordstrom, acted by Grace George; *Pietro*, written for Otis Skinner by Mrs. Skinner and Jules Eckert Goodman; *The Cat Bird*, by Rupert Hughes, used by John Drew; *The Wonderful Thing*, by Lillian Trimble Bradley; *The Ouija Board*, by Crane Wilbur; *The Hole in the Wall*, by Fred Jackson; *Macushla*, by Rida Johnson Young; *An Innocent Idea*, by Martin Brown; *Ladies' Night*, by Charlton Andrews and Avery Hopwood; *Scrambled Wives*, by Adelaide Matthews and Martin H. Stanley; *The Charm School*, by Margaret Mayo and Robert Milton; *The Cave Girl*, by Guy Bolton and George Middleton; *Genius and the Crowd*, by John J. McIntyre and Francis Hill; *Blue Bonnet*, by George Scarborough; *The Mirage*, by Edgar Selwyn; *The Outrageous Mrs. Palmer*, by Harry Wagstaff Gribble; *Daddy Dumplings*, by Earl Carroll; and *The Broken Wing*, by Charles Goddard and Paul Dickey.

Inferior plays produced during the year were: *The Acquittal*, *The Light of the World*, *Trimmed in Scarlet*, *Shavings*, *The Blue Flame*, *Mrs. Jimmie Thompson*, *All Souls Eve*, *His Chinese Wife*, *The Fall and Rise of Susan Lennox*, *Nightshade*, *Seeing Things*, *The Checkerboard*, *A Man of the People*, *Anna Ascends*, *Poldekkin*, and *When We Are Young*.

In addition to those already cited, the most important plays from foreign sources presented in the American theatre were: *The Passion Flower*, from the Spanish of Benavente; *The Tragedy of Nan*, by John Masefield; *The Letter of the Law (La Robe Rouge)*, and *The Americans in France*, from the French of Brieux; *The Skin Game*, by John Galsworthy; *Mixed Marriage*, by St. John G. Ervine; and *Deburau*, from the French of Sacha Guitry. Other plays from foreign sources were: *The Purple Mask*, adapted from the French for Leo Ditrichstein, by Matheson Lang; *Sacred and Profane Love*, by Arnold Ben-

nett, in which Elsie Ferguson played; *Spanish Love*, adapted from the Spanish, by Mary Roberts Rinehart and Avery Hopwood; *The Woman in Bronze*, adapted for Margaret Anglin, by Paul Kester from the French of Kistemaekers; *Happy-Go-Lucky*, by Ian Hay Beith, known in London as *Tillie of Bloomsbury*; *Don't Tell*, by Graham Moffat; *Thy Name Is Woman*, from Spanish and German sources; *Mary Rose*, Sir James M. Barrie's latest play; *French Leave*, by Reginald Berkeley; *The Whispering Well*, by F. H. Rose; *Mecca*, by Oscar Asche; *An Enemy of the People*, by Ibsen; *Youth*, from the German of Max Halbe; and *The Young Visitors*, from the story of Daisy Ashford.

Important revivals in addition to *Richard III* were: Euripides' *Medea*, at the hands of Maurice Browne; *The Beggar's Opera*, by a company imported from London by Arthur Hopkins; and *The Piper* of Josephine Preston Peabody Marks.

Several plays extended their run into 1920 from 1919, and one of them, *Lightnin'*, from 1918. Among them were: *Abraham Lincoln*, by John Drinkwater; *The Famous Mrs. Fair*, by James Forbes; *The Gold Diggers*, by Avery Hopwood; and *A Night Lodging*, by Maxim Gorky.

The most notable light musical plays of the season were: the revivals of *Florodora* and *Erminie*; Victor Herbert's *My Golden Girl* and *The Girl in the Spotlight*; *Lassie*, made from the comedy, *Kitty MacKay*; the Ziegfeld *Follies* of 1920; the *Greenwich Village Follies* of 1920; *What's In a Name?*; *The Night Boat*, from the French of Bisson; and *As You Were*, from the French of Rip. See LITERATURE, ENGLISH AND AMERICAN; FRENCH LITERATURE; GERMAN LITERATURE.

DRAPER, HERBERT JAMES. British painter, died in London in the latter part of September. He was born in London, studied in Paris and Rome, won the Royal Academy gold medal, and after 1890 exhibited pictures every year in the Royal Academy. The best known of his paintings was the "Lament for Icarus." During his later years he devoted himself more especially to portrait painting. Among his other paintings may be mentioned "The Sea Maiden," "Vintage Morn," "The Golden Fleece," "Tristram and Yseult," "Calypso's Isle," "The Foam Sprite," "The Dawn Star," "Ulysses and the Sirens." His pictures are widely distributed in the galleries of London and other English cities and throughout the British possessions.

DUBOIS, JAMES T. Diplomat, died at Hallstead, Pa., May 27. He was born at Hallstead, April 17, 1851, studied at Cornell and went into newspaper work, but in 1881 became consul in Germany. He was afterwards consul-general in Switzerland, and in the Straits Settlements and from 1911 to 1913, American Minister to Colombia. He wrote *Fun and Pathos of One Life*, and *Life of Ex-Speaker Galusha A. Grow*.

DUELL, CHARLES HOLLAND. Former Commissioner of Patents, died at Yonkers, N. Y., January 29. He was born at Cortland, N. Y., April 13, 1850, graduated at Hamilton College in 1871 and practiced law in New York City and in Syracuse, N. Y. He was a member of the New York Assembly in 1878 to 1880, and from 1898 to 1901, he was United States Commissioner of Patents. He was prominent as a Republican in politics, having been the Treasurer of the Republican National Committee in 1904, and a presidential elector at large from New York in

1908. In 1912 he was chairman of the New York City Roosevelt Committee. He contributed articles on patents to magazines and works of reference.

DUGRO, P (HILIP) HENRY. Judge, died March 1. He was born in New York City, Oct. 2, 1855; graduated at Columbia, 1876; and was admitted to the bar in 1878. He was member of Congress, 1881-83, and justice of the Superior Court of New York for the 10 years following 1886. He was appointed to the Supreme Court of New York State for the terms 1896-1928. Among his other activities were the building of hotels and the organization of the Union Square Bank in New York City. In politics he was a Democrat.

DULUTH, MINN. See CITY PLANNING.

DUNCAN, EDMONSTOUNE. English musician, died in Sale, Cheshire, June 28. He was born there in 1860. He wrote much chamber-music, choral works with orchestra, an opera, songs and pieces for organ and piano. He also was the author of a biography of Schubert, a *History of Music*, *Story of English Minstrelsy*, and other books.

DUNKARDS or DUNKERS. See BRETHREN, CHURCH OF THE.

DURHAM, BISHOP OF (HANDLEY CARR GLYN MOULE). British prelate, died at Cambridge, May 8. He was born at Dorchester in December, 1841, and graduated with distinction at Trinity College, Cambridge, where he was elected a fellow in 1865. In 1880 he was chosen the first principal of Ridley Hall at Cambridge, an institution resulting from the movement on the part of the Evangelical clergy to provide means for theological education in the universities. Meanwhile he had become widely known as a religious writer by his *Commentaries on the Epistles to the Romans* and other writings. He was appointed professor of divinity at Cambridge in 1899, and soon afterwards was raised to the vacant see of Durham. Among his other publications may be mentioned: *Outlines of Christian Doctrines* (1899); and an edition of Bishop Ridley's *On The Lord's Supper*.

DUTCH EAST INDIES. Islands in the Pacific belonging to the Netherlands, situated between 6° N. and 11° S. latitude and between 95° and 141° E. longitude. Capital, Batavia.

AREA AND POPULATION. The islands consist of two main divisions: first, Java, comprising 16 residences and Madura or Madoera with one residence; second, the outposts, comprising 17 provinces. The approximate area is 735,000 square miles and the total population according to the official estimate of Jan. 1, 1918, was 47,000,000. The population of the four principal towns in 1918 were: Batavia, 234,697, of whom 24,000 were Europeans; Soerabaya, 160,801; Soeracarta, 137,832; Samerang, 106,852.

PRODUCTION. Area (end of 1918) under rice, was 2,288,893 acres; corn 2,287,743 acres; cassava, 1,134,418 acres; arachis, 125,600 acres; soya beans, 32,252 acres; other secondary crops, 745,752 acres; sugar cane, 23,954; tobacco, 12,423 acres; indigo, 6809 acres; and capsicum, 13,359 acres. Government coffee plantations in 1918 produced 2792 tons and private plantations produced 68,515 tons. Tobacco in 1918 (Java) 27,887,000 kilogrammes and (Sumatra), 23,497,000 kilogrammes, a total of 51,384,000 kilogrammes; cinchona in kilogrammes amounted to 8,091,190. The production of tea in the country

for 1918 was estimated at 31,931,087 kilogrammes. Cacao (Java, 1918), 978,717 kilogrammes. The government tin mines of Banca and others yielded in 1918, 19,703 tons. The yield of the principal coal mines in Java, Sumatra, and Borneo in 1918 was 835,154 tons. Petroleum and other mineral oils (1918), came to 1,764,203,000 kilogrammes. Gold, silver, diamonds, copper, and manganese are mined. In 1918, the lands belonging to the companies had an acreage of 3,641,954 of which 1,415,884 were on the island of Java.

COMMERCE. Government and private trade, merchandise and specie are given below for 1917 and 1918 in guilders.

IMPORTS							
Year	Merchandise	Specie	Total	Merchandise	Specie	Total	Grand total
1917	20,361,000	1,600,000	21,961,000	467,019,000	7,705,000	474,724,000	496,685,000
1918	28,369,577	3,050,014	31,419,591	580,415,870	5,968,390	586,384,170	567,803,761
EXPORTS							
1917	1,670,000	149,000	1,819,000	785,110,000	6,300,000	791,410,000	793,229,000
1918	8,710,887	.....	8,710,887	675,900,381	232,718	676,133,049	679,843,886

The chief imports according to value in 1918 were rice, coal, manufactured articles, and kerosene. Singapore, Japan, the United Kingdom, and the United States were the leading countries of origin of imports. The chief countries of destination for the exports were in the order of their value, Singapore, United States, Japan, British India, and Hongkong. There is a large exportation of rice to China and Borneo. In 1918 there entered at the ports, 7543 steamships and 6350 sailing vessels with a tonnage of 2,752,193 and 360,416 respectively. The railway and tramway mileage in 1918 totaled about 3914, of which 3130 was in Java. During the year announcement was made at Batavia, Java, of plans for improvements to the railways of the Dutch East Indies, involving the construction of 6944 miles of new lines. The program outlined was to require ten years for completion and would embrace work in Java, Sumatra, Celebes, Borneo, and other islands of the archipelago.

FINANCE AND GOVERNMENT. The revenue and expenditure expressed in guilders for 1920 were as follows: Revenue, 485,880,715; expenditure, 565,690,216, a deficit of 79,809,501. The territory is under the sovereignty of the Netherlands, consisting partly of lands held directly under the government and partly of lands under subject native states. The chief of the administration is the governor-general, who is assisted by a council of five members. The governor-general has legislative as well as executive powers, and the functions of the council are partly legislative and partly advisory. Owing to reforms in the agrarian law in 1870, there has been a large extension of agriculture. The acquisition of uncultivated land has been made easy and a considerable acreage is held by companies of Europeans and other foreigners and by foreign individuals. In 1920, the governor-general was Dr. J. P. Count van Limburg Stirum, who was appointed, Oct. 28, 1915.

DUTCH GUIANA OR SURINAM. A colony of the Netherlands situated on the northern coast of South America; bounded on the north by the Atlantic Ocean, on the east by the River Marwijne, which separates it from French Guiana; on the west by the River Corantyn, which separates it from British Guiana; total area, 46,060 square miles; population Jan. 1, 1919, 107,827, exclusive of negroes and Indians

living in the forests. Capital, Paramaribo, with a population of 36,726. In 1918 there were 30 public schools with 3,806 pupils and 43 private schools with 6724 pupils. There is also a government normal school. In 1918, the religious denominations were: Moravian Brethren, 25,148; Roman Catholics, 19,460; Reformed and Lutheran, 10,083; Hindus, 20,814; Mohammedans, 12,532. Sugar production in 1918 amounted to 12,085,886 kilogrammes; cacao, 1,887,700 kilogrammes; bananas, 733,800 bunches; coffee, 1,853,000 kilogrammes; rice, 3,754,800 kilogrammes; corn, 1,873,600 kilogrammes; rum, 1,115,736 litres; and molasses, 14,040 litres. Imports in 1918 amounted to 1,157,727 guilders.

The following table shows exports to principal countries of destination in 1918 and 1919:

Countries of destination	1918	1919
Barbados	\$9,549	\$17,372
British Guiana	1,815,588	692,092
Curacao	28,278	10,470
French Guiana	326,300	287,597
Netherlands	.....	1,495,864
Trinidad	.....	648
United Kingdom	85,114	126,506
United States	1,122,231	806,202
France	.....	158,822
All other countries	.....	75
Total	\$2,832,005	\$3,595,148

Both exports and imports of Dutch Guiana for 1919 show an increase in value as compared with 1918; general business conditions were considered good, the prices obtained for the colony's exports continued high, and wages were raised in a number of cases, giving more buying power to the general population, as shown by an increase of \$1,215,909 in the imports for the year.

Local revenue (1920), 3,527,000 guilders; subvention, 1,555,000 guilders; expenditure, 5,152,000 guilders. Governor in 1920, G. J. Staal.

DUTCH REFORMED CHURCH. See REFORMED CHURCH IN AMERICA.

DUTCH WEST INDIES. This term includes CURACAO AND DUTCH GUINEA (q.v.).

DUVALL, WILLIAM PENN. Soldier, died at Coronado, Cal., March 1. He was born in St. Mary's county, Md., Jan. 13, 1841, graduated at the United States Military Academy in 1869 and by March 8, 1898, had risen to the rank of captain of artillery. He was made Inspector-General of volunteers May 17, 1898, and honorably discharged in July of that year. He subsequently served as volunteer, but reentered the regular army in 1901 and on March 2, 1906, was appointed Brigadier-General. In the following year he was made a Major-General and from 1909 to the end of 1910 was assistant to the Chief of Staff in command in the Philippines. He retired in 1911, but was re-assigned to active duty Aug. 12, 1917, when he was placed in command of the 'Southeastern Department.

DYER, ISADORE. American physician, head of the medical school at Tulane University, and celebrated for medical discoveries in leprosy and other malignant skin diseases, died at New Orleans, La., October 12. He was born at Galveston, Texas, Nov. 2, 1865, and graduated at the

Sheffield Scientific School in 1887 and from the Tulane University Medical School in 1889. He was a lecturer on diseases of the skin for 13 years, following 1892 at the Tulane Medical School of which he became Dean in 1908, holding that office till his death. He was the consulting dermatologist of many hospitals and he founded in 1894, and became the first president of, the Louisiana Lepers Home. On July 5, 1908, he was appointed Lieutenant in the army medical reserve corps and became major April 9, 1917. The list of the various scientific and other associations of which he was either member or officer and which includes some of the most important in the world is too long for mention here. He was an authority not only on leprosy, but on cancer among other skin diseases.

DYNAMO ELECTRIC MACHINERY.

During the past year the active demand for machinery of this class that had been stimulated by war conditions was generally satisfied and a number of large contracts, the completion of which had been delayed by lack of material, and difficulty with labor were completed. As regards the size of machinery, none of the generators constructed exceeded in size any formerly built. Many orders, however, called for machines rated between 20,000 kw. and 35,000 kw., and generating stations were completing installations for which they had planned three or four years earlier. At Niagara Falls, N. Y., the extension of the existing generating plant on the American side of the river included the completion of the largest generators in the world. These three machines were rated at 35,000 kw., but were capable of operating at the rate of 40,000 kw. Their design and installation required some special studies, owing to the enormous weight of the rotating parts. It was expected that all the additional energy thus produced would be promptly utilized by the various industries that had been attracted to this district in recent years. See ELECTRIC POWER; TRANSMISSION OF.

An interesting feature of the concentration of power in one generating plant was the Fisk Street station in Chicago, to which additions had been made from time to time, until during the past year, its total capacity had reached 230,000 kw.

EARTHQUAKES IN 1920. The year started with a very severe earthquake in southern Mexico, chiefly affecting the region around Vera Cruz but being felt as far as the City of Mexico. The centre of disturbance was the volcano Orizaba, which has renewed its activity. Much damage was done and many people were killed or injured. A severe shock was felt in the Canary Islands next day but this, although following immediately, probably had no connection with the Mexican disturbance. On January 22d Vera Cruz again suffered a strong shock but the damage suffered was comparatively slight. Light shocks were felt on succeeding days along the Pacific Coast, being particularly noticeable at Victoria, B. C., on the 24th. A few brick walls and chimneys were shaken down.

February was marked by minor shocks along the Pacific Coast. The cable off Callao, Peru, was broken on February 28th. On February 3d the state of Minas Geraes, Brazil, suffered a severe shock which caused some damage and loss of life. On February 19th considerable damage was done by a disturbance in the Province of Andalusia southern Spain, but fortunately no

lives were lost. In the latter part of February severe shocks were felt in Transcaucasia in the vicinity of Gori, many lives were lost, and several villages were wholly destroyed. A report from Tahiti states that shocks there also continue to be felt almost every week and frequently every day.

On May 14th central Italy was greatly disturbed in the region around Udine, much damage was done, and many lives lost. Renewed shocks occurred on June 4th near Ferrara.

In the Pacific region the chief seismologic disturbances were the earthquake at Inglewood, Cal., where some slight damage was done on June 21st, and the severe shock in Formosa on June 5th which caused several deaths. The Inglewood earthquake was studied by Stephen Taber who located its origin a short distance west of Inglewood. The maximum intensity was between VIII and IX of the Rossi-Forrel scale. The disturbance he believes to be due to a small displacement along the Inglewood San Onofre Fault, which is roughly parallel to the coast. Taber's memoir on the occurrence is published in the bulletin of the Seismological Society of America for September, 1920. Numerous shocks disturbed the whole Pacific Coast from Alaska to Santiago de Chile about July 25th.

During August Popocatepetl burst into renewed activity and accompanying it were some seismic disturbances in southern Mexico. These disturbances continued down the Pacific Coast of South America and were particularly strong in southern Chile.

On September 7th the city of Carrara, Italy, was disturbed by a severe earthquake. In the surrounding country upwards of 100 towns and villages were destroyed or damaged, hundreds of lives were lost, and thousands of persons were injured. This was quite the most appalling seismic disaster of the year unless we except the earthquake in Kansu, western China, which occurred on December 27th. A large part of the province was devastated but owing to meagre reports the exact extent of the damage is as yet unknown. An interesting fact is that the seismologists had ascribed the occurrence registered on this date to Alaska instead of western China.

EAST AFRICA PROTECTORATE.

A British dependency now having practically the status of a crown colony extending from the former German colony of East Africa to Abyssinia and Italian Somaliland and from the river Umba to the river Juba, reaching inland as far as the borders of Uganda. For administrative purposes it is divided into seven provinces, and a tract of territory not as yet completely organized, lying to the south; the provinces are each under a provincial commissioner and are in turn divided into districts and sub-districts. The provinces with their respective capitals are as follows: Seyidie (Mombasa); Ukamba (Nairobi); Tanaland (Lamu); Jubaland (Kismayu); Kenya (Nyeri); Naivasha (Naivasha); and Nyanza (Kisumu). It was placed under the control of a governor and commander-in-chief, Nov. 9, 1906, a previous decree having established an executive and a legislative council. By ordinance of July, 1919, it was provided that the legislative council should consist of 11 representatives elected by the European community, two representatives of the Indian population and one of the Arab, three nominated members, and a large enough number of official members to give

a majority. The protectorate has an area of 246,822 square miles and a population estimated in 1919 at 2,807,000 including 5362 Europeans and 17,000 Asiatics. On the coast Swahilis and Arabs predominate. In the interior are races speaking the Bantu languages and still further inland are various non-Bantu tribes. The largest town is Mombasa, the terminus of the Uganda railway, with a population of about 30,000. The capital Nairobi had a population in 1919 estimated at 14,000 of whom 800 were Europeans and 3000 Indians. The agricultural products are tropical and include rice, cassava, cocoanuts, corn, and various native grains and flour; sugar, vehicles, tobacco, agricultural implements, etc. (See AGRICULTURAL EXPERIMENT STATIONS.)

Prior to April, 1917, the statistics for Uganda and East Africa were kept separately, but since that time the foreign trade of the two protectorates is shown under one head. The total value of commercial imports during the year ended March 31, 1918, was \$13,673,313, showing a decrease of \$1,043,582, or 7 per cent from the preceding year. The imports in 1916-17 amounted to \$14,716,895, the highest figures ever reached. The figures for 1917-18, however, show an increase of 31 per cent over the pre-war year of 1913-14. The exports during the fiscal years 1916, 1917, and 1918, respectively, were as follows: \$5,408,746, \$7,853,817, and \$8,477,147. The combined exports from the protectorates of Uganda and East Africa showed an increase of \$1,246,972 or about 20 per cent over 1917. There was a steady increase in past years in the export trade, until the figures of 1918 were \$6,000,000 above those of 1908. Prices were very high, but the annual exports increased enormously. A large portion of grain and foodstuffs which in former years were prominent in the exports of the two protectorates had to be retained for local consumption on account of the war and two seasons of famine. The United Kingdom has been the chief source of the imports and the chief country of destination for the exports.

The tonnage of vessels entered and cleared in 1918-19 was 922,653. A railway runs from Mombasa to Victoria, a distance of 618 miles, and is under state control. In reply to a question raised in the British Parliament on June 14, 1920, as to the railways which it was proposed to build in British East Africa or Uganda in the immediate future, and whether the construction of such railways would be placed to open tender, the official statement of the government was in part as follows:

"The new railways contemplated in eastern Africa are a line from Nakuru, on the Uganda Railway, through Eldama and Eldoret to Sov, on the northwest of the Uasin Gishu Plateau, and an extension of the Nairobi-Thika branch for a distance which is still under the consideration of the governor. It is not at present intended to place construction to open tender; the absence of detailed information as to the route of the Uasin Gishu Railway makes it necessary to arrange for a joint survey by the government and any contractor, and for this purpose it is impossible to negotiate with more than one firm at a time."

In 1920 it was decided to change the name to Kenya Colony, after the conspicuous feature of the landscape, the great volcanic mountain, Kenya, and to give it the status of a colony instead of a protectorate.

Governor at the beginning of 1920, Maj.-Gen. Sir E. Northey.

EAST CLEVELAND, OHIO. See CITY PLANNING.

ECKMAN, GEORGE PECK. Clergyman and author, died at Scranton, Pa., June 28. He was born at Gouldsborough, Jan. 8, 1860, studied at Wesleyan University and the Drew Theological Seminary, and was ordained to the Methodist Episcopal ministry in 1886. After some years of pastoral service, he joined the editorial staff of the *Christian Advocate* (1912) and was editor until 1915. Among his writings were: *The Young Man with a Programme* (1905); *Studies in the Gospel of St. John* (1907-08); *When Christ Comes Again* (1917).

ECONOMIC ASSOCIATION, AMERICAN. See POLITICAL ECONOMY.

ECUADOR. A South American republic, situated on the Pacific Coast with Colombia on the north and Peru on the south. Capital, Quito.

AREA AND POPULATION. Area estimated at 116,000 square miles, but owing to the boundary dispute with Peru, the figure is uncertain. The population in 1913 was 1,323,900; estimated, 1915, 2,000,000.

EDUCATION. Primary education is free and compulsory on all children beginning with the sixth year. In 1920, the public schools numbered 630. In 1919 the private schools numbered 40. The total enrollment of 1919 was about 48,505. There are national colleges in all the provinces with the exception of Esmeraldas.

PRODUCTION. Tropical farming is carried on in the lower river valleys and the coast regions; grazing, dairying, and the production of crops suitable to temperate climates are carried on in the uplands. Cocoa is the staple product, the production in 1919 being 22,474 hundredweight. Coffee is raised and exported in considerable quantities, and there has been until recently a considerable rubber export, but the rubber industry has declined on account of the defective methods of production. Other products include ivory nuts, tobacco, and sugar. Gold and silver are found, and petroleum is worked especially in the district of Santa Elena. The country is for the most part under forest and abounds in dyewoods, cinchona trees and other valuable woods. An industry almost excessively carried on in Ecuador has been the making of Panama hats. The attempt of the government to keep the production entirely within the country by the heavy import duty on the material has not been successful, a considerable portion being shipped to Peru which has become an important rival in the manufacture. In 1920 there were eight factories for cotton and woollen textiles in operation, giving an annual production of about 610,000 yards of cotton and 100,000 yards of woollen cloth. The product readily found a market within the country and fell far short of the demand. New factories were projected and the manufacture of woollens on a large scale was planned.

COMMERCE. The chief exports in 1917 were cocoa, which made up nearly two-thirds of the total and after that in their order of importance, hats, ivory nuts, and hides. The chief imports in 1917 were woollen goods, foodstuffs, hardware, and clothing. The director of statistics in 1920 published the figures for foreign commerce in 1918 as follows: Total trade, 44,140,256 sucres of which 16,690,720 were imports and 27,449,536 were exports. According to newspaper reports

exports in the fiscal year, 1919-20, consisted of 77,859,308 kilogrammes, valued at 43,167,695 sucres; imports of 39,730,065 kilogrammes valued at 24,269,019 sucres.

FINANCE. Gold is the standard and the monetary unit is the sucre, of which the value is one-tenth of the English pound or \$0.48665. The revenue and expenditure for 1917 to 1920, the figures for the last-named year being estimates, are as follows:

	1917-1918	1919	1920
Expenditure	£1,829,738	£1,685,980	£1,999,566
Revenue	1,660,537	1,685,980	1,999,566

On January 1, 1918, the foreign debt was £3,520,672, and the internal debt was £2,100,049.

SHIPPING AND RAILWAYS. Almost all shipping enters the port of Guayaquil. In 1918 the steam vessels entered numbered 160 with a tonnage of 195,958 and cleared 153 with a tonnage of 181,537. There is a railway from Duran to Quito, with a length of about 365 miles. During the year there was considerable discussion of a railway projected from the port of Esmeraldas in the direction of Guito. The proposed line was to connect with a road already constructed from Quito to Santo Domingo de los Colorados and will thus open up a short route from Quito to the coast. The projected road will render accessible a fertile area of some 1,000,000 acres. To about one-half of this land a concession had been awarded to the railway by the government. This concession included several valuable water power sites.

GOVERNMENT. Executive power is in a president elected directly by the people; legislative power is in a congress consisting of two houses, of which the Senate comprises 32 Senators chosen for four years and the second chamber, 48 deputies elected for two years. The basis of suffrage is the attainment of majority and the ability to read and write. The President is assisted by a cabinet of five ministers, namely: Interior, Foreign Affairs, Public Instruction, Finance, and War. The President at the beginning of 1920 was Dr. Alfredo Baquerizo Moreno, and the President-elect for the term Sept. 1, 1920, to August 31, 1924, was Señor Luis Tamajo, elected January 11.

HISTORY. According to reports, early in April, Italy had agreed to construct public works in Ecuador in return for a grant of a tobacco monopoly to an Italian company. The 100th anniversary of the union of Guayaquil with Ecuador and its independence was celebrated during the week beginning October 9th. The United States was represented by the cruiser *Cleveland*, and Great Britain by the warship *Weymouth*; an exhibition of arts and manufactures was held; and a congress of students met. There was also a meeting of Americans in the Pan-American Union Building.

EDDY, ARTHUR JEROME. Lawyer and writer, died July 21. He was born at Flint, Mich., Nov. 5, 1859; studied law at Harvard, and was admitted to the Illinois bar in 1890, practicing thereafter at Chicago. He wrote, *Recollections of Whistler*; an account of automobile travel; *The New Compensation* (1912); *The Warning* (play); *Bond Taxes by Bond Levies* (1917).

EDIPO RE. See MUSIC, Opera.

EDUCATION. See sections so entitled in articles on foreign countries and States of the United States; also AGRICULTURAL EDUCATION;

EDUCATION IN THE UNITED STATES; LITERATURE, ENGLISH AND AMERICAN; UNIVERSITIES AND COLLEGES.

EDUCATION, AGRICULTURAL. See AGRICULTURAL EDUCATION.

EDUCATION IN THE UNITED STATES. EFFICIENCY OF STATE SCHOOL SYSTEMS. Dr. Leonard P. Ayres, Director of the Department of Education of the Russell Sage Foundation, made public a report of a comparative study of State school systems. He took certain data that had been collected by the United States Bureau of Education and combined them into the statistical measurements of the school systems in the several States. The method employed was that of determining the index number,—the same device that is constantly used for measuring changes in wholesale and retail prices and rates of wages over long periods of time. Ten sets of data were used. These included per cent of school population attending school daily, average number of days schools were kept open, average annual expenditure of child attending, annual average attendance per teacher employed and expenditure per teacher for salaries. If any State were to achieve an index of 100, all of the school children of school age would have perfect attendance for 200 days each year, a third of the pupils would be in high school, there would be as many girls as boys in the high school, the annual expenditure per child would be \$100, teachers would receive \$100 per month for 12 months in the year, and the expenditures would amount to \$200 per month for each teacher employed.

The highest index in 1890 was 48.63 for the District of Columbia. Massachusetts came second with an index of 45.86, then California with an index of 43.79, and New York with an index of 40.92. New Mexico ranked lowest with an index of 10.02, South Carolina with an index of 12.6. In 1900 Massachusetts ranked first with an index of 49.52, New York second with an index of 46.57. The District of Columbia occupied third place with an index of 44.90, and California with an index of 43.80. North Carolina had the lowest index of 17.51. New Mexico, however, had changed from 48th position to 37th. It should be noted that there was a general, though slight, improvement in the standing of these places except the District of Columbia. In 1910 the State of Washington occupied first rank with an index of 61.21. California was second with an index of 60.44. The District of Columbia was again third with an index of 56.33. Massachusetts came fourth, having an index of 56.32. South Carolina stood lowest with an index of 24.87. The period between 1910 and 1918 brought about rather remarkable changes. In 1910 Montana occupied seventh place; in 1918 it was first with an index of 75.89. California retained second position, having an index of 71.21. Arizona, which in 1910 occupied 18th position, was third with an index of 66.19. New Jersey was fourth with an index of 65.93. The District of Columbia was fifth, State of Washington sixth, Massachusetts ninth, and New York 13th. South Carolina was again lowest in the scale.

Dr. Ayres states, "The figures of the table indicate that the school systems of the Western States have made the greatest progress during the period covered. In all the divisions the most rapid forward movement was made during the decade from 1900 to 1910. In the eight years

from 1910 to 1918 the most noteworthy advance was made by the States of the North Central Division. These States of the Middle West show particularly rapid progress during the last two years of the period.

EXPENDITURES FOR PUBLIC EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS. The Bureau of Education has made public the following figures showing the cost of public elementary and secondary schools for the 50 years from 1870 to 1920:

THE EXPENDITURES FOR PUBLIC EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS	
Year	Public elementary and secondary schools
1870	\$68,000,000
1880	78,000,000
1890	141,000,000
1900	215,000,000
1910	426,000,000
1915	605,000,000
1918	762,000,000
1920	1,015,000,000

CONTINUATION SCHOOLS. Several States have within the past few years enacted continuation school laws. The most recent law of this character to go into effect is that of New Jersey, which became effective July 1, 1920. Under the terms of this law every school district in which there are legally employed 20 or more minors between the ages of 14 and 16 is required to establish a continuation school. The purpose of this school is to provide a practical type of education for boys and girls who have left the elementary school and gone to work. The school is expected to carry forward the elementary education that these young people have already received in the lower grades in order to conserve the investment already made in their education.

The State Department of Education of New Jersey urges that wherever possible the continuation school should be separately organized and in the larger cities the school should have its own building and its own corps of teachers. Schools having enrollments of 400 or more require a director and the State supplies one-half of the salary from Federal funds. A teacher quota amounting to \$400 per annum for the full time service of each approved teacher for a period of 36 weeks is also allowed.

A similar law has been in operation in New York State for more than two years. Recently considerable opposition to its enforcement has been manifest. It now seems probable that an attempt will be made to repeal the law.

FEDERAL BOARD FOR VOCATIONAL EDUCATION. *Vocational Education.* The Fourth Annual Report of the Federal Board for Vocational Education shows that Federal aid was received by 3155 schools, of which 1375 were agricultural, 758 were trade or industrial, 600 were home economics, and 322 were part time continuation schools. These schools employed 7675 vocational teachers and enrolled 265,143 vocational pupils, of whom 163,313 were male and 101,830 were female.

Rehabilitation of Disabled Soldiers. The law providing for vocational rehabilitation for disabled ex-service men became effective June 27, 1918. From that date to June 30, 1920, the total expenditures were \$34,719,196.28. Of this amount \$27,475,134.03 had been expended for purposes having direct bearing on the training of men. The items included in these expenditures are: allowances to men in training, \$23,-

653,503.71; tuition, \$2,309,233.26; travel and subsistence of trainees, \$806,407.60; books and training supply, \$486,127.22; medical attention, \$97,757.30; miscellaneous, \$55,161.14; and special fund, \$66,952.75. The Board had spent for items having an indirect bearing on the training of disabled soldiers \$7,244,002.25. The largest item in this amount was for salaries—\$5,598,454.57. Furniture and office equipment had cost \$444,005.86, and printing and stationery, \$349,597.11.

The report states that the number of men voluntarily electing to take training greatly exceeds every estimate made in the earlier period of the work. Up to June 30, 1920, 45,248 men have pursued courses. Of these 6481 were prevocational, 15,559 were trade and industrial, 11,661 were commercial, 5397 were agricultural, and 6151 were professional. Under the direction of the Board training is given for 252 occupations. Of these 128 are for trades or industries, 36 commercial, 24 agricultural, and 64 professional. Among the prevocational courses elementary education with 1567 students is the most popular. In the trade and industrial section mechanics leads with 2051 students. The general commercial courses enrolling 3439 men is the most popular in the commercial section. In the agricultural group general agriculture with 3873 men is the most popular. Among the professional group law with 816 students is the most popular.

Industrial Rehabilitation. The Industrial Rehabilitation Act was approved on June 2, 1920. This law provides for the vocational rehabilitation of persons disabled in industry or otherwise and their return to remunerative occupation. Under the law the Federal Board for Vocational Education is charged with the administration of the act. The Federal government leaves the direction of industrial rehabilitation to State authorities, but it agrees to make substantial financial contributions, provided the money is spent in accordance with the provisions of the Federal Act. The State, in order to take advantage of the appropriations, must through legislative authority accept the provisions of the act. The State is required to outline the methods proposed for carrying on the work and these plans must be approved by the Federal Board, if found to be in harmony with the spirit of the act. "Persons disabled in industry or in any legitimate occupation" are eligible to receive training.

The act provides for an appropriation of \$750,000 for the fiscal year ending June 30, 1921, and for a period of three years following the sum of \$1,000,000 annually. This sum is to be allowed to the States in the proportion which their population bears to the total population of the United States exclusive of the territories. Five thousand dollars is the minimum allowed to any State. The money received from the Federal government must be matched by an equal amount of State or local public funds.

Prior to the enactment of the Federal law 12 States had provided for industrial rehabilitation. Seventeen other States have since accepted the provisions of the Federal Act.

MILITARY TRAINING IN THE HIGH SCHOOLS. Section 40 of the Act of June 3, 1916, authorized the President of the United States "to organize and maintain in civilian institutions a reserve officers' training corps which shall consist of a senior division at universities and college requiring four years of college study for a degree, and

a junior division organized at all other public or private institutions." The primary object of this act is to provide systematic military training in civil educational institutions for the purpose of qualifying selected students as reserve officers in the military forces of the United States. Acting under authority of this law, the War Department approved 90 units in public high schools and 36 in military academies for the year ending June 30, 1920. There was a total of 57,700 high school boys in these various units. Of these 44,852 were in public high schools and 12,955 in military academies. The War Department detailed 67 commissioned and 74 non-commissioned officers for military instruction in these units. The total expenditures for the Junior R. O. T. C. were approximately \$2,500,000. The average cost per student for military training under this plan was approximately equal to the per capita cost for all instruction in high schools.

Under the provisions of the act the War Department supplied uniforms, including overcoats, hats, and shoes to each boy enrolled in the unit. They also supplied military equipment to the school for the use of the unit. In some school systems, as for example Cleveland, all high school boys 14 years of age or over, who are physically fit, are compelled to join the Junior R. O. T. C. In most places, however, membership is optional. Under these conditions, it sometimes happens that as few as 10 per cent of the boys are enrolled.

The efficiency of the Junior R. O. T. C. having been questioned by army officers and others, a civilian committee was appointed to study various units and to offer recommendations to the War Department. This committee reported that in its judgment the results did not justify the large expenditure of money and that furthermore boys of high school age, having only the physical and mental ability of such persons, were not able to absorb training of a character that would be suitable for officer training. The committee called the attention of the War Department to the experience of foreign nations in respect to military training as a part of the school system. Even in the most militaristic countries it has been found inadvisable to require formal military training as a part of the secondary school programme. Before the war there was no military training for boys of 16 or under in Germany. In general, the military and school authorities of foreign countries believe in a type of physical training which is fundamental alike to good citizenship and military requirements.

The committee recommended to the War Department that existing units should be continued under somewhat modified form in order to more thoroughly test out the efficiency of the plan. It was urged, however, that great care be taken in selecting students whose physical and academic achievement gave promise of fitting them as prospective military officers. The committee further recommended that the War Department should discontinue issuing uniforms to the students. Greater care should be exercised in selecting the officers who are to conduct the military training and the War Department should give more attention to establishing standards of achievement and providing advice and assistance in the achievement of those standards.

The National Education Association. During

the past few years the membership of the National Education Association has been so greatly increased that new methods for the conduct of the business of the Association had to be devised. This matter has been under consideration for several years, and at the Salt Lake City Meeting in July, 1920, a reorganization plan was adopted. The chief features of the plan may be summarized as follows:

The National Association is composed of State and local associations. Any State teachers' association may affiliate and thereby become a State unit in the National Association. Any local teachers' organization may affiliate and thereby become a local unit in the National Association. The governing body of the Association is the Representative Assembly, composed of delegates elected by affiliated State and local organizations.

The basis of representation of an affiliated local State association in the Representative Assembly is one delegate for each 100 of its members or major fraction thereof, who are active members of the National Association, up to 500 such members and thereafter one delegate for each 500 members or major fraction thereof.

The basis of representation of an affiliated local association in the Representative Assembly is one delegate for each 100 members or major fraction thereof. Local associations must have, therefore, at least 51 members in order to be entitled to a delegate. All delegates, both State and local, have equal rights and privileges in the Representative Assembly and each has one vote. Affiliated State associations are assessed annual dues of \$10 for each delegate to which such association is entitled in the Representative Assembly, the maximum dues being \$100.

The annual dues of each affiliated local association are five dollars. The National Association continues to enroll individual members and only those who are active members of the National Association are eligible to membership in the affiliated State and local associations.

A PROPOSED FEDERAL DEPARTMENT OF EDUCATION. During the past several years there has been a large amount of discussion in educational circles relative to the establishment of a Federal Department of Education with a Secretary of Education in the President's cabinet. The difficulties that the country has experienced in reference to the supply of teachers has served to emphasize the importance of some constructive measure to meet the situation. There is now before Congress a measure known as the Smith-Towner Bill, the chief provisions of which are the following:

1. Creates a Department of Education with a Secretary in the President's Cabinet.
2. Transfers the Bureau of Education to the Department of Education and provides that other bureaus, divisions, boards, or branches of government which, in the judgment of the President, should be controlled by, or the functions of which should be exercised by, the Department of Education, be transferred to that department.
3. Provides an appropriation of \$500,000,000 in addition to the amount now available for the Bureau of Education for administrative expenses and for research. It is provided that investigations be undertaken in the field of illiteracy, immigrant education, public school education, and especially rural education, physical education, including health education, recreation, and sani-

tation, preparation and supply of competent teachers for public schools, and in such other fields as, in the judgment of the Secretary of Education, may require attention and study.

4. Appropriation of \$100,000,000 for the following purposes: \$7,500,000 for the removal of illiteracy; \$7,500,000 for Americanization; \$20,000,000 for physical education, including health education and sanitation; \$15,000,000 for the preparation of teachers; \$50,000,000 for equalizing educational opportunities throughout the nation.

5. "No money shall be apportioned to any State unless a sum equally as large shall be provided by said State, by local authorities, or by both, for the same purpose," and provided, "that the sum or sums provided by a State for the equalization of educational opportunities, for the promotion of physical education, and for the preparation of teachers shall not be less for any year than the amount provided for the same purpose for the fiscal year next preceding the acceptance of the provisions of this act by said State."

6. In order to receive funds a State must maintain a legal school term of at least 24 weeks, a compulsory school attendance law covering the ages of 7-14 inclusive, and the English language shall be the basic language of instruction in common school branches in all schools, public and private.

7. It is expressly provided that the act "shall not be construed to require uniformity of plans, means, or methods," and provided further "that all educational facilities encouraged by the provisions of the act shall be organized, supervised, and administered exclusively by the legally constituted State and local educational authorities."

In addition to hundreds of Chambers of Commerce, Rotary Clubs, Kiwanis Clubs, Women's Clubs and other local organizations the following national organizations are supporting the bill: National Education Association, American Federation of Labor, American Federation of Teachers, General Federation of Women's Clubs, National Congress of Mothers and Parent Teacher Associations, American Library Association, National Council of Jewish Women, Association of Collegiate Alumnae, Patriotic Order Sons of America, National League of Women Voters, and National Society Daughters of the American Revolution.

TEACHER SCARCITY. The scarcity of teachers, which began to be serious in 1916, continued throughout 1920. The most reliable reports available indicate that more than 100,000 teachers were lacking during this year and that 300,000 children were deprived of proper school privileges. In addition to this a large number of schools were taught by persons who were incompetent to properly fill the positions. Until the past September there continued to be a decreasing number entering the normal schools and preparing to teach. In general, States and localities endeavored to meet the situation by increasing the salaries of teachers. In several States the minimum legal salary for teachers in the public schools is \$800. Almost without exception the cities and various schools districts have been anxious to increase the salaries of their teachers, but in many instances the impossibility of raising larger taxes for this purpose has created a serious problem.

Bills for increasing State appropriations for

teachers' salaries were before nearly every Legislature that met in 1920. In many States important measures were adopted. Indiana, for example, enacted a law providing for increases of about 30 per cent in the salaries of teachers in the common schools. The most important legislative act, however, is found in New York State. In accordance with an act which was signed by Governor Smith on May 11th the sum of \$20,550,000 was raised by a direct State tax of one and one-half mills for the purpose of increasing the salaries of teachers. The law makes definite requirements regarding the minimum salary that must be paid in cities and communities of different sizes and in general stipulates the number and amount of annual increments. In addition, it appropriates amounts varying from \$600 per teacher in New York City to \$250 per teacher in rural schools.

Throughout the country the question of raising sufficient sums to meet the increasing financial demands of the schools is reaching a critical stage. The school system of New York City has a deficit of \$28,000,000. Other municipalities are in almost as desperate a condition.

Excessive cost of building, coupled with the rapid increase of population in many of the cities, has created a serious situation in reference to the housing of schools. For the past three years very little has been done in regard to repairing and improving existing school buildings. Consequently, many of the cities are now facing the question of large bond issues for school buildings. Perhaps there could be no better evidence of the public confidence in the value of schools than has been manifested by the overwhelming majorities that have voted in favor of very large bond issues for school buildings and increased taxes for the support of the schools.

VOCATIONAL REHABILITATION. The Federal government provided for the subsidizing of State vocational rehabilitation to the extent of \$750,000 this year and \$1,000,000 for the next two years among the States in proportion to population on condition that each State appropriate an equal amount. Each State also must accept the Federal vocational rehabilitation act. The Federal Board of Vocational Education has been appropriated \$75,000 annually for four years. This law went into effect June 2, 1920.

Maintenance allowances for disabled soldiers and sailors were increased from \$80 to \$100 for single men and from \$100 to \$120 for men with dependents. This law went into effect June 5, 1920.

STATE LEGISLATION. The Federal act for vocational rehabilitation of industrial cripples was accepted by Alabama, Georgia, Massachusetts, New Jersey, New York, North Carolina, Oregon, and Virginia. A committee was constituted to consider and report on the advisability of extending the work of the industrial accident board to provide industrial training and aid by mechanical appliances for industrial cripples.

NEW YORK. Opportunity for rehabilitation is offered to "any person who, by reason of a physical defect or infirmity, whether congenital or acquired by accident, injury, or disease, is or may be expected to be totally or partially incapacitated for remunerative occupation." The industrial commission and the health department are both taking a part in this work.

OREGON. The industrial accident commission

is authorized to arrange for the rehabilitation of those injured by accident "while working under the protection of the workmen's compensation law." One hundred thousand dollars is appropriated. This law went into effect Jan. 16, 1920.

VIRGINIA. A division for rehabilitation was established under the industrial commission to further the work on vocational rehabilitation.

NORTH CAROLINA. A commission of five was appointed to investigate and report on the advisability of a workmen's compensation act.

EDWARDS, Sir OWEN MORGAN. British historian of Wales, died in Wales in May. He was born Dec. 25, 1858, and studied at universities in Wales, Scotland, and England, where he won medals for literature, philosophy, and history. In 1889 he was appointed lecturer in modern history at Lincoln College, Oxford. He wrote the *History of Wales* which is regarded as a standard authority and he edited the Welsh classics. He published books in the Welsh language and founded and carried on several Welsh magazines including *Cymru* of which he was editor and proprietor till 1907. After that he was chief inspector of education for Wales.

EFFICIENCY OF STATE SCHOOL SYSTEMS. See EDUCATION IN THE UNITED STATES.

EGYPT. Former British protectorate; status of modified independence under consideration in 1920, but not definitely determined; situated in the northeastern part of Africa. Capital, Cairo.

AREA AND POPULATION. The total area of Egypt proper including the region between the Nile and the Red Sea, the Sinaitic peninsula, and the Libyan desert, but not including Sudan, is estimated at about 350,000 square miles. The cultivated area comprising the Nile Valley and delta covers 12,226 square miles. The population according to the census of March, 1917, was 12,750,918, exclusive of nomad Bedouins. Egypt proper comprises the five governorships of Cairo, Alexandria, Damietta, Canal, and Suez. The remainder of Egypt is divided into Lower Egypt and Upper Egypt, which are in turn subdivided into six and eight provinces respectively. The population of Cairo in 1917 was 790,939; Alexandria, 444,617; Port Said, including Iamaila, 91,090; Suez, 30,996. For further details see preceding YEAR BOOKS.

EDUCATION. Elementary instruction is provided in the native elementary schools called *Maktabs*, which in 1919 numbered 3643 with an enrollment of 218,184 pupils. There are besides, higher elementary schools; elementary training colleges for teachers; industrial, agricultural, and commercial schools; and higher primary schools. The total number of schools which were under control of the provincial councils, either directly or through grants-in-aid numbered 3748 with an enrollment of 228,089. The various schools that were directly under the management of the administration of education at the end of 1919 had an attendance of 34,381. The religions according to the census of 1917 were distributed as follows: Mohammedans, 11,658,148; Orthodox, 854,778; other Christians, 155,168; Jews, 59,581; others, 23,243. The Orthodox Christians in the above list are Copts, tracing their descent from the ancient Egyptians and professing the Jacobite faith established in the first century A.D. Their head is the patriarch of Alexandria. They are under three metropolitan bishops and

12 bishops. The centre of Mohammedan culture is the mosque and university of El-Azhar at Cairo, where the Koranic learning is taught. It had in 1914, 405 professors and 9749 students. According to the provisional figures of the census of 1917, the number of illiterates per 1000 was 933.

AGRICULTURE. Egypt's arable area was placed in 1918 at 7,820,801 feddans (one feddan equals 1.038 acres) of which 2,785,033 could be cultivated only after reclamation. In 1918 there were 7843 foreign landowners, owning 687,764 feddans, and 1,729,251 native landowners, owning 4,801,360, making a total ownership of 5,489,124 feddans distributed among 1,737,094 proprietors. The chief product is cotton. See AGRICULTURE. On November 10, 1920, the new cotton crop for Egypt was estimated at 612,000,000 pounds. The other principal crops were as follows (1918 figures): Area and yield of wheat respectively, 1,286,215 acres and 874,720 tons; barley, 336,471 acres and 214,916 tons; corn, 1,811,655 acres and millet 314,196 acres; rice, 385,382 acres.

COMMERCE. The following table shows the import and export totals for the years 1913, 1918, and 1919, and the annual balance of trade (values are given in United States currency, conversions in this and in following tables in this report having been made at the rate of \$4.90 to the Egyptian pound):

Years.	Imports.	Exports.	Trade Balance.
1913	\$139,047,324	\$157,251,311	+\$18,203,987
1918	255,264,976	226,396,400	- 28,868,576
1919	236,574,488	378,682,722	+142,108,234

COMMUNICATIONS. In 1918 the tonnage of vessels passing through the Suez Canal exclusive of vessels requisitioned by the military authorities was 4,839,956 of which 3,228,311 were British and 489,092 were Japanese. The next in the order of importance were French and Italian. Including warships, the total tonnage in 1918 of all kinds was 9,251,601 and the receipts were £3,718,796. The railway mileage exclusive of sidings, March 31, 1919, was 2339, state-owned and operated, and 726 miles owned by private companies. The telegraphs and telephones belonging to the government on that date had a mileage of 6311 and the post offices and stations numbered 2485.

FINANCE. The revenue and expenditure for six years, those for 1919-20 being estimates, are shown in the following table taken from the *Statesman's Year Book* for 1920.

Years	Revenue ££	Expenditure ££
1914-15	15,389,124	16,857,783
1915-16	17,759,418	16,594,666
1916-17	19,927,274	17,240,606
1917-18	23,166,074	22,496,948
1918-19	27,661,289	23,384,326
1919-20	28,850,000	28,850,000

The final account for the year 1918-19 (April 1st to March 31st) and the estimates for 1919-20 are given by the *Statesman's Year Book* for 1920, as follows:

	1918-19 Actual figures ££	1919-20 Estimates ££
Receipts		
Direct taxes:		
Land tax, etc.	5,612,291	5,572,000
Indirect taxes:		
Customs	4,189,168	4,200,000
Tobacco	2,156,523	2,350,000
Excise	580,398	407,000
Miscellaneous taxes	332,716	291,000

Receipts from revenue earning administrations:		
Railways	6,991,105	6,750,000
Telegraphs	237,726	200,000
Post Office	402,831	375,000
Telephones	251,005	200,000
Receipts from administrative services:		
Ports and lighthouses	91,427	170,000
Judicial and registration fees	1,606,939	1,660,000
Miscellaneous revenue	4,464,126	4,585,000
Total ordinary revenue ..	26,916,255	26,760,000
Extraordinary revenue	745,034	540,000
Draft on general reserve		1,550,000
Total	27,661,289	28,850,000

Expenditures	1918-19	1919-20
	Actual figures £E	Estimates £E
Civil list	367,988	413,465
Expenses of administration ..	8,377,380	9,493,957
Expenses of revenue earning administrations:		
Railways	3,685,950	5,374,669
Telegraphs	166,676	144,479
Post Office	366,671	382,257
Telephones	139,512	140,228
Army:		
Egyptian Army	1,753,455	1,442,624
Army of Occupation	146,250	146,250
Pensions	733,095	733,407
Tribute and debt:		
Tribute	664,826	664,826
Expenses of Caisse de la Dette		
Consolidated debt	3,552,266	3,552,266
Non-consolidated debt	344,151	359,180
Sundries		26,373
War gratuities	1,252,458	1,505,000
Extraordinary expenditure in connection with the war ..	517,810	400,000
Settlement of claims arising out of the recent disorders		1,000,000
Total ordinary expenditure	22,062,424	25,807,981
Expenditure for new works ..	1,321,902	3,042,019
Total	23,384,326	28,850,000

The debt and charge on guaranteed loans, privileged debt, and unified debt in April, 1919, were as follows: Debt, £93,388,640; charge, £E3,552,266. The debt was reduced by £177,100 in 1918-19, and the charges on the account of debts of all kinds were estimated in 1919-20 at £E4,605,272.

GOVERNMENT. Soon after the war broke out a British protectorate was proclaimed over Egypt, Dec. 18, 1914, and on the following day Abbas Hilmi was deposed and the title of sultan bestowed upon Hussein Kamil, who died in 1917, and was succeeded by Ahmad Fuad Pasha, who assumed the title of Fuad I (Oct. 9, 1917). The British policy as announced in November, 1919, was to insure the self-government of the country under British protection. Self-government was to be developed so far as possible, but Great Britain was to retain control of foreign affairs and defend the country from interference by any foreign Power. At the same time a constitutional system under British guidance was to be established and the natives were to take an increasing part in the direction of affairs. Pursuant to this policy a mission under Lord Milner was sent to Egypt for the purpose of working out a programme. At the beginning of 1920 the Egyptian ministry was constituted as follows: President of the Council and Minister of Finance, Yusef Wahba Pasha; Minister of Education, Yehia Ibrahim Pasha; Minister of Interior, Mohammed Tewfik Nassim Pasha; Minister of Justice, Ahmed Zulficar Pasha; Minister of Agricul-

ture, Mohammed Shafik Pasha; Minister of Wakfs, Hussein Darwish Pasha; and Minister of Communications, Ahmed Ziwer Pasha. The ministry of communications in the above list was established in 1919 to control the state railways, telegraphs, posts, ports, light-houses, transports, roads, and bridges, etc. The High Commissioner in 1920 was Field-Marshal Viscount Allenby.

The extent to which self-government had been carried out under British rule by the beginning of 1920 is of interest, in view of the Egyptian movement for independence during that year as recounted below. Certain representative institutions were created by the law of May 1, 1883, including a legislative council, a general assembly, and provincial councils, but they were for the most part advisory, and legislative power remained in the hands of the Khedive and his ministers. In July, 1913, new laws substituted for the legislative council and the general assembly, the so-called legislative assembly which was composed of the ministers and of 66 elected members and 17 members named by the government as representative of minority elements of the population. Elections to the assembly were indirect, through the medium of elector-delegates. Members of the assembly were elected for six years, one-third of their number being renewed every two years. The assembly did not possess full legislative power. It could propose laws and its advice was required in respect to measures for loans, tax assessments, and changes in the railway or irrigation systems; but the government was not bound by its decisions. In one respect, the assembly had the complete veto power: Any new direct personal or land tax required its sanction. Upon the provincial councils were bestowed in 1909 the power of applying by-laws and authorizing public markets, and certain other powers pertaining to local affairs. The native courts under the Kadis retain jurisdiction only in matters of personal law and in cases unrelated to religion and concerning the non-Moslem inhabitants. Other matters are adjudicated by native tribunals established in 1883. After 1905 serious offenses were tried at the central tribunal from which an appeal lies to the Court of Appeal.

HISTORY. The mission under Lord Milner sent to Egypt in November, 1919, to report on the causes of unrest and to form a plan of settlement, returned to England after four months. The British government as represented by Earl Curzon, appeared unwilling to grant complete Egyptian liberty on account of the necessity of stable government in Egypt. It appeared not to believe that the Egyptians were capable of maintaining such a government or of protecting their own frontiers and in such a case there would be serious danger to the African and Indian possessions of the Empire. These principles set forth by the foreign secretary in the latter part of 1919 continued to govern British policy toward Egypt during 1920. There was great distrust in Egypt of the Milner mission and strong insistence upon a wider sphere of Egyptian liberty than the British government appeared willing to grant. On May 18th the Wahba Ministry retired and was succeeded by a new ministry under Tewfik Messim Pasha who had been trained in the school of Cromer and Kitchener. In the summer, an Egyptian delegation headed by Zagloul Pasha was in conference in London with Lord Milner;

and in August, a plan was formed which made concessions to the wishes of the Egyptians. But as soon as the compromise was made known in Egypt, it was sharply criticized by the Nationalists, who said it virtually retained the protectorate. In respect to foreign relations, they said it made Egypt a mere satellite of the British Empire; for while Egypt might send and receive ambassadors, it much conform in all respects to British policy; and would have to fight on the side of England in war. Moreover, it stipulated that a British military force would be maintained in Egypt and although the British government disclaimed any intention of occupying the country, the presence of this force would be a menace. The financial terms were also criticized. These provided that the two governments should agree upon a financial council and a judiciary council. This would mean virtual British control of the Egyptian finances and courts. On the other hand, the cost of the army would fall on Great Britain. Another advantage to the Egyptians was that the Department of Education would be left entirely in their hands. In September, popular opinion was consulted in Egypt, with unfavorable results and in November, the negotiations were broken off. The changes in the Milner-Zaghloul compromise demanded by the Egyptians were as follows: Formal abolition of the protectorate; suppression of the financial and judicial tutelage; settlement of the Sudan question in favor of Egypt. While Lord Milner preferred to break off negotiations rather than accept these changes, he said that the door was open to further discussion. At the close of the year, the British government was planning to resume negotiations.

EKENGREN, WILHELM AUGUST F. Swedish minister to the United States, died at Washington, D. C., November 26. He was born in 1861 and graduated at the University of Upsala in 1895. He served in consulates in France, Germany, and New York, and after 1903 was for several years in the Swedish foreign office. He was appointed minister to the United States in March, 1912, after serving here six years as secretary and counsellor of the legation.

ELECTRICAL INDUSTRIES. During the past year the application of electric energy in industry continued on an increasing scale. Many factories formerly operated by steam power were replacing steam boilers and engines with electric motors deriving their energy from electric transmission lines. In the steel industry in particular, electric furnaces of various type were being introduced in many places with highly satisfactory results as to cost and quality of product. Many rolling mills substituted electric motors for steam engines, and the ease of regulation and control afforded by the former machines gave satisfactory evidence of the wisdom of such substitution. The *Electrical World* (Sept. 4, 1920) published a statement of the business being done by the two largest electrical manufacturing companies in the United States. In this article it was stated that during the first six months of the year the General Electric Company had on its books orders totaling \$190,000,000, a figure about 65 per cent of its total sales for the entire year 1919. The Westinghouse Electric and Manufacturing Company had booked orders for the first six months of 1920 at the rate of more than \$80,000,000.

From the same source it was learned that the total number of customers of central station at the beginning of the year was 8,520,400. While there was a widespread effort on the part of central stations and manufacturers of heating appliances to extend the use of these latter devices, the results were quite similar to those reached in 1919. Small appliances which promoted convenience and cleanliness in household work had extensive sales, but in many localities the introduction of electricity for the heating of buildings found rather disappointing response. The heavy initial cost of such devices as well as the large amount of reserve power required in central stations to supply energy for them during the cold season only were cited as among the causes for the slow progress of substituting electricity for direct coal heating of buildings.

In those industries utilizing electric power in connection with chemical processes there was a steady growth noted during the year, and it was confidently expected that a large proportion of the increased power available at the end of the year at the Niagara Falls plants would be rapidly taken up for electro-chemical industries in the neighborhood. (See DYNAMO ELECTRIC MACHINERY.)

ELECTRIC LIGHTING. There was comparatively little progress to record during the year. Lamp manufacturers were turning out incandescent lamps showing high efficiencies and were developing a lamp containing a small amount of argon, which in practice, showed an excellent degree of economy when operated at high candle powers. For searchlights with incandescent lamps to be employed for special purposes such as flood-lighting, the reflectors and other incidental apparatus were improved to a considerable degree. For indoor lighting, illuminating engineers were recommending the use of opalescent bulbs, as glass of this kind, particularly when used with high candle power lamps gave a highly satisfactory distribution of light with an agreeable effect upon the eye. In this connection, also, many analytical studies were made of physical and psychological effects of bright illumination upon persons exposed to such lights for long periods of time. Realizing that factory lighting was not in a generally satisfactory state, studies were continually made to illuminate work shops with more intense lights, and by properly distributing them to avoid the effects of glare that had been inseparable from many of the early installations of electric lighting.

The National Electric Light Association installed in several large cities exhibits of lamps and lighting appliances as object lessons for the purpose of informing the public of the most economical and satisfactory practice in illumination.

ELECTRIC POWER, TRANSMISSION OF. The financial conditions prevailing throughout most of the year prevented the carrying out of any new undertakings in transmitting electric power on a large scale. Many schemes were planned for but only a little work had been undertaken at the close of the year. Certain features, however, were notable, and among these was the preparation by one of the power companies in California to increase the working voltage on a line more than 200 miles in length, from 150,000 volts to 220,000 volts. The intention of this change

was to make it possible to transmit more power, because the existing line was being worked up to almost the limit of its capacity. Some changes in the details of the switching apparatus were to be made, and while the installation of such high voltages presented serious problems, it was confidently expected that these would be readily solved. The practice of inter-connecting separate systems, mentioned in the 1919 YEAR BOOK (see ELECTRIC POWER, TRANSMISSION OF), was continued during 1920. A particular instance of this was the work undertaken by the Southern Power Company, in the construction of a large hydro-electric power plant near Charlotte, N. C. This plant was to be tied in with eight other large stations comprising the Southern Power Company's system.

A plan for the construction of several large central stations and their inter-connection with others already operating was seriously discussed by the leading engineering societies. This was called the Super-Power Zone Plan and was intended to supply electric energy to all the railways between Boston and Washington and extending for a considerable distance back from the coast. A conservative estimate showed that the adoption of electric power by all the railways included in the zone and comprising about 6000 miles of line would save 30,000,000 tons of coal annually. (See RAILWAYS, ELECTRIC.)

ELECTRIC RAILWAYS. See RAILWAYS, ELECTRIC.

ELLIS, ALSTON. University president, died at Athens, Ohio, November 15. He was born in Kenton County, Ohio, in 1847, and graduated at Miami University in 1865. After teaching school and serving as superintendent of public schools in Ohio, he was president of the State Agricultural College in Colorado, 1892-1900, being for most of that period also director of the Colorado Experimental Stations. From July 18, 1901 to the time of his death, he was president of Ohio University. He was an officer in numerous educational and scientific associations and was the author of a history of the ungraded schools of Ohio.

ELLIS, ARTHUR J. American geologist, died, July 22. At the time of his death he was serving as a geologist in the United States Geological Survey. He was born in Kansas, Jan. 6, 1885, and graduated at the University of Illinois in 1908. After service with the Illinois Geological Survey he was appointed to the United States Geological Survey in 1911 and rose to the position of assistant-chief in the ground water division. He wrote reports on the ground waters of Connecticut and San Diego County, Cal., and a widely read treatise on *The History of the Divining Rod*.

ELON COLLEGE. An institution of learning situated at Elon College, N. C., maintained by the Christians, organized in 1889. In the fall of 1920 there were 368 students and 28 members in the faculty, 2 members having been added in the course of the year. The library contained 12,000 volumes. The income was \$237,614. President, William Allen Harper, Litt.D., LL.D.

ELSON, LOUIS CHARLES. American writer on music, died at Boston, Mass., February 14. He was born at Boston, April 17, 1848; studied there and in Germany. After working for a Boston musical paper, he became musical editor of the *Boston Advertiser* and after 1881 he lec-

tured at the New England Conservatory of Music. His first success was *Curiosities of Music* (1883). His other books include *The Great Composers* (1897); *Our National Music* (1889); *History of American Music* (1904); *Musical Dictionary* (1906); *Mistakes and Disputed Points in Music* (1910); *Women in Music* (1918); *Children in Music* (1918). He was editor-in-chief of the *University Encyclopedia of Music* (10 volumes, 1911).

EMERICK, CHARLES FRANKLIN. Educator, died at Northampton, Mass., March 22. He was born near Dayton, Ohio, Nov. 17, 1867, graduated at Wittenberg College, Ohio, in 1889. He taught in the department of economics and sociology at Smith College, Northampton after 1903, and wrote: *Analysis of Agricultural Discontent in the United States*; *Government Loans to Farmers*; *Struggle for Equality in the United States*; *A Neglected Factor in Race Suicide*. . .

ENCEPHALITIS, EPIDEMIC. This disease is commonly spoken of in the lay press as "sleeping sickness," a name already preëmpted by an entirely different condition which is endemic in Africa. Originally characterized as a lethargy it was soon learned that this symptom is by no means constant so that the original term of "lethargic encephalitis" has been replaced simply by epidemic encephalitis, which in turn is not entirely happy, because there are other affections which merit this term, including a complication or type of influenza, a type of infantile paralysis, epidemic meningitis, and even hydrophobia. The disease in question is either new or appears only at considerable intervals. It has recently appeared in nearly every part of the world and has a very high mortality, but fortunately has thus far attacked but a very small per cent of people. It has been known in its present form for about four years and shows no sign of diminution which makes it certain that it is the first world outbreak. It stands in some unknown association with pandemic influenza, but in the pandemic of the latter in 1890, it passed for a phase of that disease with the exception of a peculiar, transitory visitation in Northern Italy in the silk worm district where it was known by the name of "nona" and was compared to a lethargic condition of the silk worm which is said to appear in that creature every eight or nine days ("nona" meaning ninth). It is doubtful whether this disease was the same as that which is now prevalent. When the government commission had reached the spot the disease had vanished. From time to time, as far back as the sixteenth century, affections have appeared in groups or singly which seem identical with the types now under study but the practical problem is the relationship of the epidemic to influenza. There is plenty of evidence that it can precede or follow an outbreak of the latter or occur in its absence yet there are border line cases in which the two affections cannot be distinguished. The literature of the subject is enormous and shows no prospect of subsidence. Not only the medical profession but the public are deeply interested in it and health officers have sent out blanks to the general practitioner so that he may fill in a great variety of detailed information. The mysterious affection strikes down its victims without warning and, as stated before, the death rate is high. Some distinguished men have fallen victims to it.

The most characteristic symptom which can be perceived by others is paralysis of some of the eye muscles, the most noticeable being drooping of the eyelids. Many so-called walking cases in individuals attending to their ordinary duties have been recognized by this one symptom, and many such have been reported. One curious thing to record of the affection is its strong resemblance in some respects to another mysterious malady—botulism, a form of food poisoning from eating spoiled olives, etc. In England the two maladies were at first confounded on a large scale, and in the individual case it is best to make sure that the patient has not eaten of any suspicious article. So great is the variety of symptoms and types of disease in epidemic encephalitis that it is impossible to outline them in a few words. The number of other conditions which it has simulated is large. While no cause has been isolated the infection can be conveyed to animals and the infectious material is contained in the nasal secretions and according to some in the saliva. It is not contagious from man to man as far as known but no risk can be taken. There are no data to suggest that the disease is on the increase or that it will ever menace whole communities.

EMPLOYERS' LIABILITY. See WORKMEN'S COMPENSATION.

EMPLOYMENT. See LABOR LEGISLATION.

ENGINE, GAS OR OIL. See INTERNAL COMBUSTION ENGINE.

ENGINES, STEAM. See STEAM ENGINES; STEAM TURBINES.

ENGINEERING. Engineering in 1920 reflected general conditions and in turn was influenced by them. Readjustments and uncertainties, financial and political conditions the world over, and the time required to get back to normal activities all were advanced as reasons for an uneventful year, with construction far below what was required and what would be considered normal. Comparatively few large projects were put under way or seriously considered, though such possible works as great bridges to connect New York and New Jersey across the Hudson and Philadelphia and New Jersey across the Delaware were presented for discussion while the restoration of the railways to their owners after an experience of government operation with attending deterioration of plant and right of way and failure to make required developments in many cases brought pressing problems. In fact in this last connection it was believed that the engineers of the United States had a most important problem to bring the railways up to the demands of traffic even with the legislation that had been enacted to secure this end. (See RAILWAYS.)

While the engineer of course figured prominently in all the railway councils yet it was on the construction side that he was called upon to function most conspicuously and the construction of new lines and the improvement of existing facilities led to new or rebuilt bridges (q.v.), tunnels (q.v.), locomotives (q.v.), etc., while the problems of electrification (q.v.) in which financial rather than engineering questions were prominent while discussed were not seriously taken up.

Roads and highways (q.v.) received attention due to the increased number of automobiles (q.v.) and the use of motor trucks for freight

transportation. Here again huge construction costs were facing the tax payers in the form of interest charges on bond issues, and there was a call for better, more lasting, and more economical construction. In both rail, water, and motor transportation the matter of terminal facilities became acute during the year and it was realized that much had to be done ranging from proper piers for ocean shipping to municipal markets.

Rapid transit (q.v.) also figured during the year with items on both sides of the ledger. Many interurban or rural trolley lines were abandoned due to inability to meet fixed charges with increased operating costs and a limited fare, and in several cities operation was attended with great difficulty for the same reason. On the other hand subway construction went forward, and such work as the vehicular tunnel between Manhattan Island and New Jersey was started.

In the field of flood protection (q.v.) the work on the Miami Conservancy project advanced and several Western cities were preparing in anticipation of the inevitable damage or danger likely to overtake them at time of flood. In canals (q.v.) there were to be noted the adding of new terminals to the New York Barge Canal and the beginning of work on the Illinois State Waterway, as well as the active discussion of a Great Lakes to the Sea International Waterway involving the deepening or canalization of the St. Lawrence River. Hydro-electric plants of large size, witness the 37,500 horse power turbines at Niagara Falls, and high head reaction turbines on the Pacific Coast with 220,000 volt transmission line, were completed or were well under way, among which should be mentioned the Muscle Shoals project of the United States government.

In mechanical engineering high costs were felt comparatively early in the year and soon led to curtailments especially in manufacturing where financing of earlier years could not be continued. In fact in 1920 construction and manufacturing had to face the conditions resulting from abnormal costs of labor and materials and over-extended credits and more or less general extravagance. During the year conservatism became the order forced by the inevitable reaction and deflation which came about and which were making for a sounder industrial condition. It was inevitable that with high and uncertain prices of materials and uncertain financial possibilities much needed construction work must be forced to wait and this ranged all the way from great projects and public utilities to building. (See ARCHITECTURE AND BUILDING.)

FEDERATED AMERICAN ENGINEERING SOCIETIES. One of the events in American engineering was the establishment of the Federated American Engineering Societies, which was formed to include all the important engineering societies with the single and conspicuous exception of the American Society of Civil Engineers, which decline to participate in the movement. With this Federation was joined the Engineering Council an emergency body organized during the war to mobilize the engineering talent of the country. This last named organization dissolved but the council was adopted as the governing body of the Federated American Engineering Societies and at the first meeting in Washington, D. C., Nov. 18-20, 1920, Herbert Hoover was elected president of the amalgamated organizations. The four vice presidents selected were Calvert Townley, of New

York; William E. Rolfe, of St. Louis; Dean Dexter S. Kimball, of Cornell and J. Parke Channing, of New York. Committees to deal with military affairs, New York State government reorganization, patents, classification and compensation of engineers, types of government contract, and other questions were appointed. Elimination of waste in industry was stated as a principal aim of the new council.

Furthermore the engineering council contemplated setting on foot a campaign of public service, involving coöperation with chambers of commerce, labor organizations, and other bodies in an effort to solve social, industrial, and political problems.

During 1920 the American Association of Engineers increased its membership from 10,000 to 24,000 organized on a basis of local chapters with paid secretaries at important centres. This organization aimed to improve the status of engineers by securing better and equitable compensation especially for those in the lower ranks of the profession, and to encourage or watch legislation having to do with engineering such as propositions to license engineers. The Association was developing on a conservative basis and was far from proving merely a union of draftsmen and other workers as was at first anticipated in some quarters.

The licensing of engineers in the various States continued and there seemed to be a general extension of both the idea and the practice, eleven different States at the close of 1920 having arranged for such licensing. Accordingly some basis of reciprocal relations between the different States seemed to be desirable as well as common codes of practice and some degree of harmony in the different laws and regulations. It was thought likely that the newer and larger engineering organizations as well as the older professional societies and institutes would show increased interest in this field, particularly in the direction of securing uniformity.

ENGINEERING COUNCIL. See MUNICIPAL GOVERNMENT; also ENGINEERING.

ENGLAND. England proper is the largest and most densely populated portion of the United Kingdom. The term as employed in reference to the government is sometimes used for the United Kingdom of Great Britain and Ireland. See GREAT BRITAIN.

ENGLISH. See PHILOLOGY.

ENTRANCE REQUIREMENTS OF COLLEGES AND UNIVERSITIES. See UNIVERSITIES AND COLLEGES.

EPILEPSY. It is estimated that there are 50,000 epileptics in the United States, many of whom are interned in colonies, hospitals, and asylums. The balance are cared for at home or are found among criminals and vagabonds. Of the selected cases treated in colonies about 5 per cent are cured. There has been no notable advance since the institution of colony treatment, but we are learning always more of the intimate nature of the disease. The distinction formerly made between primary or essential and symptomatic epilepsy is becoming fainter. Thus many patients who owe their epilepsy to some lesion of the brain present the so-called epileptic constitution and the lesion only served perhaps to bring out a condition already potentially present. The condition is markedly periodical without much attempt at fixed periodicity. Some subjects have

but few attacks in an entire lifetime and these are often men of unusual mental ability. At the other extreme we see cases which pass from one attack to another until the attacks overlap and cause a fatal outcome. The vast majority are well between these extremes. In about 20 per cent of cases the ancestry is normal and there is absolutely nothing to explain the disease. As a rule however the heredity is bad on one or both sides. Of great significance is the so-called epileptic disposition or temperament, which is often seen in those who never develop the disease. This temperament has been the subject of many essays. The characteristics are antisocial traits, colossal sensitiveness and egotism, selfishness and indifference to the rights of others, total lack of adaptation to surroundings, self assertion, and various other character defects too many for enumeration. Once it was regarded as impossible to make the subject of this disposition aware of his character defects but doubtless a certain per cent can be made to tolerate criticism. The task is a hard one for the victim usually flies into a rage at any attempt to reason with him. As a sort of defense reaction the confirmed epileptic may develop an attitude of humility and hypocrisy with a tendency toward piety which however is merely a subconscious mask and unattended with any true change of character. In other words the lack of self control is so pronounced that no outside aid will serve to correct it and the egotism natural to the subject prevents any attempt at change from within. The chance for the subject to obtain full insight into his condition and to gain in self control is immensely improved by colony life and largely because he is withdrawn from his home circle. Usually he is in a constant antagonism with the family members, neighbors, and others. Association with other epileptics in colonies so far from aggravating his symptoms seems to benefit him. The conditions of colony life are far different from those in hospitals and asylums because of the much greater restraint in the latter and association with a much more hopeless type of epileptic. However, no outside influence seems able to modify the disease or precipitate convulsions. With attacks sufficiently numerous, frequent and severe the mind sooner or later deteriorates and epileptic dementia develops. Even at an early period mental tests show that slight deterioration is in progress. In regard to treatment it has always been sought to diminish the total number of attacks and so ward off dementia; but the only drugs of sufficient value to use in wholesale fashion—bromides—may produce a condition often but little less severe than the disease. The aim of recent years has been to find means to limit the use of these substances. Recently the drug known as luminal has been used to replace bromides. Dr. Van Nuys of the Indiana Village for Epileptics has recently announced that he has used it very freely on 200 of his patients, some over a period of eight months. The dose used was $1\frac{1}{2}$ to 2 grains each evening. He makes no announcement as to his results.

EPIRUS. A district of Southern Albania and Northern Greece with uncertain boundaries (?). The population of the Greek portion consisting of the division of Yanina was given at the Greek provisional census of 1913 at 245,-

618. Northern Epirus has a population of about 250,000 and its chief towns are Argyrocastro with 8000 and Korytza with 40,000, but the figures are uncertain. In November, 1914, Greece secured the consent of the Powers to her occupation of Northern Epirus, and she took possession in March, 1916, but the occupation was not formally recognized by the Powers, and after the autumn of 1916 the Italians held the district with the exception of Korytza and surrounding country, which was occupied by the French. Down to 1920, the status of the region had not been determined.

EPISCOPAL CHURCH. See **PROTESTANT EPISCOPAL CHURCH.**

EPWORTH LEAGUE. See articles on the Methodist denominations.

ERITREA. An Italian colony in Africa, situated on the west coast of the Red Sea, extending from Cape Kasar to Cape Dumeirah with a coast-line of about 670 miles. Area, about 45,000 square miles. The population, which is largely nomadic, was estimated at 380,000 in 1919. Other estimates place it as high as 450,000. Capital, Asmara. In 1920 signs of great commercial development were reported, and the port of Massaua promised to be in the future the chief port for the trade of Northern Abyssinia and the entrepot for a large trade with the Arabian regions in the Red Sea. There is a considerable production of salt, and pearl-fishing is carried on. Livestock include camels, oxen, sheep and goats; and there is a local trade in their products. The imports in 1917 amounted to 47,591,643 lire and the exports 21,660,428 lire. The colony's budget estimates for the year 1919-20 were as follows: Colonial revenue 8,681,000 lire; state contributions, 6,650,000; extraordinary revenue, 8,790,000; total, 24,121,000; expenditure, civil administration, 10,323,384; military, 3,906,000; extraordinary expenditure 9,891,616; total 24,121,000. No later statistics for railways could be given than those in the preceding YEAR BOOK.

ESKIMO. See **ALASKA.**

ERRINGTON, Sir GEORGE. British diplomat, died on March 19. He was born in 1839. He joined the Home Rule movement in 1873 and entered Parliament in 1874. He was best known for the "Errington Mission." After the difficulties arising from the disorders in Ireland when Parnell and hundreds of his supporters had been arrested, Mr. Gladstone, who was then Prime Minister, determined to make an appeal to the Vatican and to this end authorized Mr. Errington to proceed on a mission to Rome, but not as an official representative. Mr. Gladstone later declared that the government did not wish to resume relations with Rome and Mr. Errington was left in an anomalous position. He had acted in good faith throughout, and his services were recognized by bestowing on him a baronetcy. He retired from Parliament in 1885.

ESSAD, PASHA. Former Minister of War in Albania, shot and killed in Paris, June 13. He was the head of a large family known as the Toptani who claimed descent from rulers of central Albania in the fifteenth century. The Sultan of Turkey made him brigadier-general in command of the gendarmes at Jania and during his stay there he was reported to have made a fortune. In 1908 he was in command of the gendarmes at Scutari. When the Young Turk move-

ment had developed he joined it partly in the hope of obtaining liberty for Albania and partly for the purpose of avenging his brother, Gani Bey, who had been murdered at Constantinople. supposedly at the instance of Sultan Abdul Hamid. Essad Pasha was one of the two men who appeared before the Sultan and ordered him to abdicate. After Prince William of Wied assumed the government at Durazzo, March 7, 1914, Essad was made Minister of War and of the Interior. When matters turned against Prince William, Essad was suspected of being in relations with the insurgents. He was bombarded in his house and after his surrender was sent in exile during the pleasure of Prince William. The latter's rule, however, soon came to an end and during the war Essad returned to Albania and was made president of a provisional government, Oct. 5, 1914. This, however, was said to have been brought about simply by his threatening to shoot the entire senate if he were not chosen. Under Essad, the Albanian government sided with the Allies. Essad, however, was obliged to leave the country on account of the protest of the Italian government against his residence there. He went to Saloniki and thence to Paris. The accounts of his career were conflicting and of his personal character even more so.

ESSAYS. See **LITERATURE, ENGLISH AND AMERICAN.**

ESTHONIA. One of the Baltic provinces of the former Russian Empire lying north of Livonia and south of the Gulf of Finland; after February, 1918, a new state comprising besides the former government of Esthonia in Russia, the northern part of Livonia and the north-western part of Pskova. Area, about 23,160 square miles; population about 1,750,000, of whom 95 per cent are Esthonians. As to religion, about five-sixths of the people are Lutherans. Elementary education is compulsory. Dorpat University was re-opened toward the end of 1919 as an Esthonian institution. On Feb. 24, 1918, the government of Esthonia was recognized as a *de facto* government by Great Britain; May 13, 1918, by France; May 29, 1918, by Italy; and subsequently by Japan, Poland, and Sweden. Russia recognized it as a government *de jure*, Dec. 31, 1919. The United States and France refused to recognize its *de jure* independence on the ground that it formed an integral part of the former Russian Empire. On June 4, 1919, a provisional constitution was established by a constituent assembly, consisting of 120 members. According to this, the source of power remained in the constituent assembly, and the executive authority was vested in the president of that assembly, who was assisted by a cabinet of 11 members. The president at the beginning of 1920 was August Rei, and the prime minister was Jann Toenisson. The budget estimates for 1920 were as follows: Revenue, 1,071,000,000 marks; expenditure, 979,450,000 marks.

The Moscow and Esthonian governments formed an armistice Dec. 31, 1919, and arranged a treaty, signed February 2. By this, Russia recognized Esthonia's independence. Other provisions included the formation of a commercial treaty in which Esthonia was to receive the

favorable nation treatment; the immediate establishment of diplomatic and trade relations; the payment by Russia of 15,000,000 rubles in gold; concession for the building of a railway between Revel and Moscow; the granting to Esthonia of control over 27,000,000 acres of Russian forest land; the granting by Esthonia to Russia of freedom of entry of all goods from South Russia at Esthonian ports without tax or duty and of the privilege of using the water power of the Narova River. See RUSSIA and WAR OF THE NATIONS.

ETHNOLOGY. See ANTHROPOLOGY.

EUGENIE, EMPRESS (Marie Eugénie Ignace Augustine). Former Empress of France, wife of Napoleon III, died in Spain, July 11. She had been for a long time in ill health, but her death was unexpected. She was born in Granada, Spain, May 5, 1826, the daughter of a grandee of Spain who afterwards assumed the title and inherited the fortune of the Count de Montijo. The family left Madrid in 1834, at the time of political confusion and settled in Paris, where Eugénie made the acquaintance of many literary celebrities of the time, including Prosper Mérimée and Stendhal. She returned occasionally to Madrid, but after 1847 settled permanently in Paris. There, while moving in the society of the court, she became acquainted with Louis Napoleon, and they were married, Jan. 30, 1853. She was actively interested in public affairs, exerting a considerable influence over the Emperor, especially in matters of foreign policy, and she acted as Regent during his absence in the Italian campaign. To her was attributed in part the Mexican adventure in which Maximilian lost his life. During the Civil War in the United States she sided with the party that hoped for the failure of the North in order that American power might be weakened and France gain a foothold in the new world. There has been much controversy over the question of her responsibility for the war of 1870, and authorities are conflicting, but the words attributed to her by a hostile press, "This is my own war," are not generally taken as authentic. Her enemies believed that she welcomed the war because it would result in making her Regent. After the disaster of Sedan she escaped to Deauville, having obtained a passport by the help of the American dentist, Dr. Evans, and the British ambassador. From there she was taken to England on board an English yacht arriving on September 8. She lived for the next ten years at Chislehurst, in the large Jacobean mansion, Camden Place, where she was joined by Napoleon in March, 1871. After the Emperor's death there, January 3, 1873, she lived in retirement, devoting her attention chiefly to the bringing up of her son, the ill-fated Prince Imperial who was killed in the Zulu War, June 1, 1879. From 1879 to 1900 she was a close friend of Queen Victoria. Her funeral was celebrated in the Abbey church of Farnborough, July 20th.

EUGENE ONIEGIN. See MUSIC, *Opera*.

EVANGELICAL ASSOCIATION. This denomination is composed largely of German-born citizens of the United States, with doctrines similar to those of the Methodist Church. The latest available statistics (1919), show 154,564 communicants, 1697 churches, 1160 ministers, 198,435 pupils in the Sunday Schools, together with 24,358 officers and teachers, besides a Young People's Alliance with 1148 societies and 39,718

members. Reports for 1920 show 527 missions in the United States with 510 missionaries; 163 missions in Europe with 159 missionaries; and 45 missions with 53 missionaries in Asia, making a total number of missions of 735, a decrease of about 50 from the year before. During the year work among the Italians in this country has progressed rapidly. Much relief work has been done among the suffering peoples of Europe. The Association has been taking an active part in the Christianizing of Japan and China. Total receipts for missionary work during 1920 amounted to \$640,817.05 or an average of \$4.02 per member. The principal periodicals are the *Evangelical Herald*, and the *Evangelical Messenger*, published by the Association in Cleveland, Ohio. In addition there are several periodicals printed in German. Hospitals are maintained in Philadelphia, Chicago, and other cities of the Middle West. Educational institutions are as follows: Correspondence College, Reading, Pa.; Evangelical Theological Seminary, Naperville, Ill.; Northwestern College, Naperville, Ill.; Schuylkill Seminary and Evangelical School of Theology, Reading, Pa.; and a preachers' seminary in Germany. The headquarters of the Association is in Cleveland, Ohio.

EVANGELICAL CHURCH, UNITED. Reports for the year ending June 1, 1920, show that there were in this denomination 88,827 members, a slight decrease from last year; 512 itinerant preachers, 188 local preachers, and 941 churches. Sunday schools numbered 929, with 13,470 officers and teachers, and 109,354 scholars. Total pledges to the Forward Campaign amounted to \$875,314. Home missionary work is carried on in 10 fields, principally in the Middle West. Three hundred missionaries are employed in this work, and have 30,883 members in their churches and 52,065 in their Sunday schools. Conversions during the year numbered 2815. Foreign missionary work is carried on in China, and at present there are two missionaries in the Sudan, Africa. A total of \$281,571.58 was received for all missionary work during the year or more than \$50,000 increase over the previous year. The following colleges are maintained by the church: Albright College, Western Union College, the Bible Teachers' Training School (New York City), and the Illinois Training School for Christian Workers. The principal publication is the *Evangelical*, with publishing house at Harrisburg, Pa.

EVANGELICAL SYNOD OF NORTH AMERICA. This denomination stands for the positive and progressive principles of the German Reformation and emphasizes the unity of the Spirit in the bonds of peace among all the Protestant bodies of the country. Founded in 1840, at Gravois Settlement, St. Louis County, Mo., the organization grew rapidly and now extends over 37 states of the Union. The church comprises 19 districts and two mission territories, and is presided over by four general officers. The General Conference meets every four years, the next meeting being in 1921. At the close of 1919 there were 1034 pastors serving 1385 churches and missions; members numbered 335,651; Sunday School members and teachers numbered 144,876. The value of church property was \$20,258,847. A total of \$441,395.30 was raised for benevolences of all kinds. An extensive and successful relief work is being maintained in Germany.

Missionary work is carried on in India and in Honduras. In India six stations are maintained with a total staff of 18 American missionaries, men and women, married and unmarried, and 290 native workers. Educational and evangelistic work has been begun in Honduras at San Pedro, with four American missionaries, two men and two women, in charge. The home mission churches number about 100 served by about 80 mission workers. The church maintains 12 deaconess homes and hospitals, two for epileptics and feeble minded, and eight homes for orphans and old people, valued in the aggregate at \$1,500,000. Eden Theological Seminary is located at St. Louis, and Elmhurst College, at Elmhurst, Ill. Eden Publishing House, the official publication agency, is also in St. Louis.

EVOLUTION. See ZOOLOGY.

EWING, Sir THOMAS. Australian public official, died in New South Wales, September 15. He was born at Pitt Town, New South Wales. From 1885 to 1901 he was member of the Legislative Assembly of the province and during that time served on important commissions relating to public works. He was elected to the first federal House of Representatives in 1901 and remained a member until 1910. Among the public offices that he held may be mentioned those of ministry for Home Affairs and the ministry for Defense in the Deakin Cabinet. He published various works on Australasian subjects.

EXPERIMENT STATIONS. See AGRICULTURAL EXPERIMENT STATIONS.

EXPLORATION. In the past it was the explorer, then the missionary and last the trader. To-day it is often the agent of captains of industry who, seeking raw materials, is the pioneer traveler. So the field of exploration steadily tends to the higher phases of ethnographical research, economic investigation and industrial exploitation, as the areas of unknown lands and seas steadily dwindle. The scientists of the Smithsonian Institution accurately define the objects of exploration as for the purpose of increasing our fund of knowledge regarding the inhabitants, the fauna, the flora and the physical features of the little known regions of the earth. The World War very largely reduced the number of expeditions, confining them almost entirely to regions having definite relations to military operations.

AFRICA. There have been invaded the past year two of the least known regions of this continent, the Atlas range of Morocco, and the Uganda district. It is to be noted that the hitherto extensive and unvisited sections of Morocco and the great Sahara are fast coming under the knowledge of man through French enterprise. The aeroplane is doing marvelous work, and an air base has been established at Colom-Bechar, in the extreme southwest part of Algeria. Thence much unknown region is reached, and two days' journey carries one to Timbuctoo, formerly three months by caravan. During the past year the French topographical mission surveyed several thousand square kilometres of the hitherto inaccessible mountainous areas of northeast Morocco. The mission outlined the limitation of the crest separating the watersheds of the Mouloya and Kert rivers. Captain Augieras, March-May-1920, starting from Beni Abbes, crossed the southwestern Sahara of Morocco. In over 600 miles' travel beyond Tabelbala, over the harmada (tableland), from Iguidi, he met

no one. His researches materially modify the previously charted topography of this region, as also of the Draa plateau. The ethnographical expedition, 1919-20, sent into the Uganda region under the auspices of the Royal Society of London, has returned having been most successful. It was in charge of the Rev. John Roscoe, whose previous extended residence in Uganda fitted him admirably for the work. The field of exploration covered the grass lands between Lake Victoria and the western Rift Valley. Special investigations were made of the life conditions of the Basina, Batusi, Bativas and neighboring tribes. Of special interest was the pigmy Bativa race. Roscoe's preliminary report is of unusual ethnographic interest. It is stated that his most important conclusion is the demonstration of an Asiatic migration of a people of Semitic stock, which through many ages has preserved its original precepts regarding marriage, divorce, chastity, land tenure, etc. Communistic rules obtain as to private property, and fetishism was the religious belief. Among these tribes customs prevail which Egyptologists considered as being extinct thousands of years ago. Some tribes are purely pastoral, rarely eating vegetables and living almost entirely on milk. Besides numerous photographs Roscoe brought back collections of utensils, implements, etc., concerning milk customs, which illustrate the central idea of their life. Further reports are awaited with interest.

ASIA. Although large areas of Asia are scarcely known,—the Gobi desert and the Tibet, Himalayan region, circumstances have prevented their late exploration. However, Mr. Raeburn, London Alpine Club, attempted this autumn, the exploration of the middle slopes of Kinchm junga, the third highest peak of the world. The party hardly passed 20,000 feet on the mountain, which is 28,156 feet high. However, a new pass 18,000 feet was discovered. Misfortune attended the Swedish scientific expedition to Kamtchatka, which was wrecked near Cape Lapotha, in July, 1920, fortunately without loss of life. Dr. R. P. Licent explored extensive areas of the basin of the Yellow River, bringing back much data relative to the provinces of Tche-Li, Chan-Si, Chen-Si, and Honan, as well as from Central Mongolia.

Of the war journeys in Asia the most notable were those of Mr. Philby, Indian Service, which included the crossing of Arabia in 1917 and the visiting of the southern confines of the great desert in eastern Arabia in 1918. The most extended journey was that from Ojair, on the Persian Gulf, to Jidda on the Red Sea. Bordering the Persian Gulf is the great oasis of Hasa, whose principal town, Hufaf, of 30,000 brings at times 100,000 for its great fairs. Philby dissipates the reputed desert horrors of the Dahan, Red Desert, which is but 25 miles wide and is favored by occasional and fruitful rains. The highlands of Najd, the great central desert, were the difficult and desolate parts, with its four mountain ranges, high tablelands, and great wastes of sand and limestone. Its area of over 500,000 square miles, is almost entirely unknown territory. The expedition traveled no less than 140 miles without seeing any one. The journey contributes many data regarding this vast uninhabited region.

EUROPE. Delimitations and boundaries explain the few surveys of illy-known portions of Eu-

rope. M. Boucart surveyed the rarely visited mountainous regions of Albania, his researches being in the Opari and Schar ranges. This journey supplements the Italian surveys, along geological and topographical lines, from Valona to the Curvalesi region.

NORTH AMERICA. The prevailing interest of American scientific explorers of to-day is evident from the unusual activities displayed in researches and investigations relating to the prehistoric races of the United States. In the southwest are numerous ruins, which especially engage the attention of explorers, since they attest the presence in remote ages of a civilization comparable to that of ancient Mexico. During 1920 the Secretary of the Interior, under the law of December, 1896, granted permits for the examination, excavation, etc., of seven ruins in Arizona, six in New Mexico, and six in Utah. These explorations are prosecuted by the Smithsonian Institution, United States National Museum, the Universities of Arizona, Harvard, Nebraska, and Utah, by the Museums of American Natural History, American Indian Research, Carnegie, Milwaukee and Santa Fe, and by the National Geographic Society. Santa Fe is said to have discovered a communal settlement, where a structure 45 stories high and containing 1000 rooms furnished homes for the tribe. The Phillips Academy, Andover, excavated near Santa Fe, a city of four-storied houses, which yielded many burial mounds, and household remains of varied interest, especially in pottery. The National Geographic Society has devoted its activities to a survey of Chaco Canyon, where the immense communal houses of Pueblo Bonito and Chetro Kettle afford remains which indicate a high stage of Pueblo skill in pottery and allied arts.

CANADA. The grave inexpediency of boundary making on paper, without surveys, has been again indicated in the case of Canada and Labrador. Explorations have demonstrated the forestal wealth of the Labrador Peninsula, whence arises the question of jurisdiction. When Newfoundland was set off as a separate province, the letters patent allotted to it the coast of Labrador, which was later defined as including that part of the shore which lay to the east of a line drawn from Blanc Sablon, Straits of Belle Isle, to Cape Chidley. Under strict construction this would transfer to the jurisdiction of the province of Ungava, Canada, a considerable portion of the Labrador coast.

CANADIAN ARCTIC EXPEDITION, 1913-18. Under its leader, Dr. R. M. Anderson, the scientific discoveries of the southern party are gradually appearing. Of the volumes on insects, crustacea, mollusks, annelids, etc., 30 of the 47 memoirs have been published. Among the insects are eight genera, 93 species and five sub-species—new to science.

SOUTH AMERICA. Geographic research and exploration still continue in this continent, where immense areas of unknown regions await the scientist. Colonel Fawcett, who served with the Commission for the demarcation of the Brazil-Bolivian boundary, is now engaged with an official Brazilian expedition in geographic and ethnological exploration of unknown portions of western Brazil. The biological survey of South America, initiated by Chapman in 1911 was continued in 1920 in southern Ecuador by Anthony and Cherric. Through the Para Industrial Com-

pany an expedition is surveying the forestal, agricultural, and mineral resources of the basin of the Amazon. This to promote the traffic of Para.

The most extended and important exploration was that of Dr. A. Hamilton Rice, in the northwest basin of the Amazon and of the upper Orinoco. He ascended the Amazon from Manaoas to the Rio Negros, an affluent of the Amazon 800 miles from the sea. Following up the Negros he crossed to the Orinoco through that remarkable waterway, the Casiquiare Canal, which unites the two rivers. In his efforts to reach the sources of the Orinoco, Rice reached the rapids, named after the Guaharivos, the so-called white Indians. The natives proved to be violently hostile, but though illy armed the expedition fortunately escaped without casualties, but was obliged to retreat. Rice's magnetic, meteorological and physical observations are valuable contributions, and his astronomical work was so complete as to enable him to map the country from Rio Negros to the Guahari Rapids. O. Nordenskiöld is engaged in a scientific expedition to the Gulf of Penas, Patagonia. Marquis de Wavrin is making ethnographical studies of tribes in western Paraguay and southern Bolivia, in untraversed regions.

SMITHSONIAN. Under Dr. Charles D. Walcott, the Smithsonian Institution has continued its field work in the interests of science. Dr. Walcott, in connection with the Upper Cambrian formations, discovered in field-work north of the Canadian Pacific Railroad an unmetamorphosed, undisturbed section, and also fossils to determine the various formations and to correlate them with formations elsewhere. Heller and Haven crossed Africa from Capetown to Egypt, collecting plants and mammals of which 239 mammals and birds were received in one shipment, principally from little known regions. Hoy collected 240 mammals and 228 birds, representing the fast disappearing and remarkable fauna of Australia. Hrdlicka made researches in Japan, Korea, Manchuria, North China, and South Mongolia, relative to the origin of the peoples of eastern Asia and of American Indians. Abbott and Leon collected 10,000 specimens of Hawaiian plants. Hitchcock's botanical work in British Guiana produced over 1200 specimens. The Jamaica plant collections of Maxon and Killip exceed 10,000 in specimens. Dr. Abbott's researches in Santo Domingo had largely increased his collections in fauna and flora, besides archaeological objects from the Samana caves. The Smithsonian field work in the United States covered the Ozark caves, which yielded many prehistoric objects; the mounds of the Cumberland Valley; and the Taos Pueblo ruins; while Fewkes in Mesa Verde Park discovered a cliff house,—the Fire Temple—devoted to fire rites.

MISCELLANEOUS. Extended explorations of New Guinea, the largest island of the world, were made under extraordinary conditions by a German officer, Captain Dentzner. When the World War began he was engaged in the survey of the Anglo-German boundary. Certain of capture if he returned to his base, he cast in his lot with the natives for about five years. His travels resulted in extensive data relating to the ethnology, fauna and flora of hitherto unknown areas. The regions covered were the valleys of the Waria and Watut (a southern tributary of the the Markham), and ranges of Saruvaged and

Finisterre, where peaks exceeding 13,000 feet were found. Carl Lumholtz, known for his explorations of Australia, Mexico, and Borneo, has started on an expedition which plans the crossing of New Guinea through unknown jungles and over snow-capped ranges. Warren and Dyer explored in 1920 the Groote archipelago. Borneo has again been crossed, by B. W. E. Massey, his route being via the Barito, Busang, Kerihau and Kapuas rivers. See POLAR RESEARCH.

EXPOSITIONS. No great world's fair was held during the year, but a bill was introduced in Congress calling for the holding of an international exposition in Philadelphia in 1926 to commemorate the 150th anniversary of the signing of the Declaration of Independence. An appropriation of \$50,000 was proposed to be used by a commission of two representatives from each State to be appointed by the President to make plans for the exposition.

The International Exposition of Industries, held in the Grand Central Palace in New York was continued during the early part of the year, but later, announcement was made that after April 1, 1921, the building would no longer be available for exposition purposes as the owners intend to convert the Palace into an office building.

The British Industries Fair of 1920, the sixth of the series of sample fairs that have been held annually under the auspices of the British Board of Trade since 1912, was held (in the Crystal Palace) in London from February 23 to March 5, and concurrently therewith, there were fairs (in several buildings requisitioned for the purpose, in Birmingham, and (in Kelvin Hall of Industry) in Glasgow. In these exhibitions every article was of British make. The exhibits in London included cutlery, silver, electroplate, and allied trades; glassware of all descriptions, china and earthenware; stationery, etc.; fancy goods; leather used for fancy goods, bookbinding and upholstery trades; brushes; toys and sport goods, scientific instruments, and optical goods. A wide range of the industrial products of the Midlands were represented in Birmingham, while textiles, clothing, hosiery, footwear, chemicals, and foodstuffs were shown in Glasgow.

Similarly three great trade fairs were held in France. The first of these was held in Paris from May 5 to May 24, and surpassed in every way all former efforts. There were about 3500 exhibitions and the visitors were estimated at about 1,000,000 persons. Only products of French origin or manufacture were shown. This fair was held in the Esplanade des Invalides and had the appearance of a miniature city. Two fairs were held in Lyon, one in the Spring and the other in the Autumn. Both were successful and the number of exhibitors increased materially. The Bordeaux fair was held from June 5 to June 20 and catered largely to the colonial demands. These French fairs have reached the proportion of expositions and have proved to be the best means of attracting buyers. Their steady growth has not only created worldwide interest in them, but has added to the importance of international trade. Americans are participating in them more and more, and at the Lyon fair there were about 100 American exhibitors, in striking contrast to the dozen that displayed merchandise at the first one. There has also

been a corresponding increase in the number of American buyers.

The fourth Swiss Sample fair was held in Basel during April 15-29. Permanent buildings were erected at a cost of about \$2,000,000 for this event which in elaborateness of display excelled its predecessors. The products as usual were exclusively of Swiss manufacture. The exhibits numbered about 1200 and the number of buyers was greater this year than in 1919. A first Watch and Jewelry Fair was held in Geneva during July 11-25. There were 173 manufacturers represented and orders amounting to about \$1,400,000 were booked. The visitors numbered 25,000. A Belgian sample exhibit was held in Basel during October 18-November 3.

A first annual Commercial Fair was held in Brussels during April 4-21 at which 1602 exhibitors participated, including five from the United States. There were divisions devoted to food products, metallurgical products, electrical goods, industrial supplies, construction materials, rubber and rubber goods, chemical products, drugs and pharmaceutical products, textiles, ready-made clothing, leather, furniture, and goods for interior decoration, church furnishings, glassware and pottery, jewelry, including watches and gold and silver articles, perfumery, toys, articles of wood, paper, and cardboard, books, and printing materials, photographic supplies, automobile and aviation equipment, and musical instruments. Also there were departments of publicity, agriculture, horticulture, and apiculture, colonial products, decorative and industrial art, economic services, and general and technical instruction. Three separate expositions were held in Antwerp during the Seventh Olympics. These were an International Exhibition of Motor Cars during May 15-June 13. Also an International Exhibition of commercial and agricultural tractors, camions, and motors, from June 26-July 25, and an International Exhibition of sports, side cars, motorcycles, and accessories, from August 7-September 15.

The Fourth Annual Industrial Fair of the Netherlands was held in Utrecht during February and March. It was the first to be held in the permanent buildings especially erected for the purpose. Almost every branch of Dutch industry was represented. The fair had a strictly national character, only products of Dutch manufacture being admitted. A company was organized in the autumn at the Hague for the purpose of sending a "floating fair" as it is called, but practically a ship loaded with sample products and commercial agents to sell them, to various parts of the world, particularly the United States.

The Second Frankfort Industrial Fair was held from May 2 to May 11. Exhibits were included in the following sections: Leather and leather products; jewelry and watches; products of the technical arts and trades; so-called Chinese and Japanese goods; machinery; steam engines and electric motors; metal products; optical goods; moving-picture appliances; photographic apparatus; medical, surgical, and chemical articles; perfumes and soaps; toilet articles; foodstuffs; raw materials and partly finished products. The usual Spring fair was held in Leipzig during March 2-9. An increased number of exhibits was displayed and the attendance was over 100,000 persons. Large orders were taken, but

actual sales were few. The general price scale was considered exorbitant, but this was pursuant to a new fixed policy of the German Government to encourage its exporters to charge world market prices, abandoning the former German commercial policy of underselling. The autumn fair was a disappointment. Musical instruments, amber goods, jewelry, toys, and ivory made up the largest orders. The number of orders received were very small and there were very few American buyers.

A first Spring Fair, was held in Danzig during February 18 to 25. The number of exhibitors announced was about 1100. The number of visitors was large, particularly from Danzig, the surrounding districts, and Poland. In spite of the interest in the fair evidenced by both exhibitors and public, the results were a disappointment, especially in the volume of orders. Many exhibitors were unable to guarantee either prices or date of delivery, and could take orders only subject to liberal terms concerning strikes, transportation difficulties, etc. On the other hand, the exhibitors themselves were keenly disappointed at the absence of buyers from the Scandinavian and other countries possessing a high exchange. A second fair announced for August 15-22, was abandoned although a surplus of 300,000 marks in favor of Danzig was left over from the Spring Fair. It is reported that Cologne is planning to inaugurate a permanent exhibition, known as "Musterschau," mainly for raw material and half-manufactured goods. It is intended that special exhibitions will be held periodically. For the use of the exhibition two large halls of iron construction are already in the course of erection, to which smaller buildings will be added according to requirements.

The first Commercial Fair ever held in Norway was opened at Christiania on September 5, in the presence of the King and Queen. This fair modeled on those held in Leipzig, aroused widespread interest and was considered a great success. About 300 Norwegian manufacturing firms were represented in the exhibition of products. During the week that the fair remained open there were 50,000 visitors, and the number of purchasers buying from the samples shown was between 6000 and 7000 of whom about 300 were from abroad. The Swedish Industries Fair was held in Goteborg during July 5-11.

A first Finnish Industries Fair was held in Helsingfors during June 27-July 6. All branches of Finnish trade and industry were represented. The foreign exhibit also was rather large and varied, although most of the foreign firms exhibited through their local representatives. The import restrictions, however, caused difficulties. Practically no bargains could be concluded and foreign exhibitors were disappointed, although a net profit of about 200,000 marks in real estate and fixtures was reported.

The first Prague, Czechoslovakia, Sample Fair was held during September 12-28 in the Industrial Palace. There were 2100 exhibitors and the visitors numbered over 250,000. The total sales were estimated at 900,000,000 crowns.

The exhibition of British made goods held in the Zappeion Building in Athens, Greece, during Oct. 19-Nov. 23, 1919, was under the control of the Federation of British Industries, organized in 1916 for the development of British trade throughout the world. It represented more

than 16,000 commercial houses with a combined capital of some \$20,000,000,000. The success of the enterprise was not what it was expected, but the importance of Athens as a strategical commercial point is evident and it is believed that in the near future Greece will become a storehouse for supplying neighboring, and even far off, regions.

In Italy, a first Sample Fair was held in Milan during April. It was opened to manufacturers of all countries and the participation of industries lacking in Italy were especially desired. Orders amounting to 1,076,640,133 lire were conditionally offered and the actual business concluded totaled 523,928,810 lire. A second Sample Fair was held in Padua during June 1-15, which was successful. During October an International Sample Fair was held in Trieste, which had for its chief object the development of trade interests in the Orient. The success of the sample fairs held in Milan and in Padua seemed to have been sufficient to stimulate further interest in this plan of developing sales. A later project of this character was that of a floating fair on board the steamship *Trinacria*, which visited the principal cities of the Western Mediterranean in the interests of Italian manufacturers. The length of the stay in each port varied in accordance with its importance, from four to seven days. Provision was made for special exhibits of practically all kinds of goods, whose manufacture in Italy was important, including food products, textiles, machinery, automobiles, glassware, art goods, etc.

The Barcelona, Spain, Sample Fair, after several postponements, was finally held during October 24-31. The exhibits were shown in the Palace of Fine Arts, one of the largest exhibition buildings in Spain.

In South America a number of minor exhibitions were held including the National Live Stock Exposition (July 4-11), in Rio de Janeiro, Brazil, and an exhibition of British products was held in Lima, Peru, in April. Also arrangements were made for an exhibition of American products in Buenos Aires, Argentina, under the auspices of the National Exposition of United States manufacturers during October. A first Pan-American Exhibition of Architecture was held in Montevideo, Uruguay, during March 1-7.

A fair was held during May in Bandoeng, near Batavia, Java, at which foreign manufacturers were invited to exhibit their products. The exhibits included all articles manufactured in the Dutch East Indies, all raw materials and partly manufactured goods needed there, including both domestic and imported goods, and all imported goods required to start new industries or modernize and improve existing industries.

In commemoration of the 100th anniversary of the independence of Peru, an International Industrial Exposition will be held in Lima during July, August, September, and October, 1921. A site in a most desirable location of the city has been set aside by the Government and contracts for the construction of the buildings have been awarded which are to be ready for occupancy in May. Already 10,000 square feet of space have been tentatively taken for exhibits by American manufacturers.

EXTENSION WORK. See AGRICULTURAL EXTENSION WORK.

FABER, EDMOND BECKETT, Lord. British banker, died in September. He was born in

Hertfordshire, and educated at Eton and Cambridge. He joined the banking firm of Beckett and Company of which he became senior partner. He was a member of the Royal Commission on the transfer of land and served in other important financial capacities, and was a member of Parliament from 1901 to 1905. He also had important interests in the newspapers of Yorkshire.

FAILURES. See FINANCIAL REVIEW.

FAIRHOLME, WILLIAM ERNEST. British soldier and diplomat, died, August 7. He was born at Leamington, Feb. 5, 1860, educated at Harrow and Woolwich and entered the royal artillery in 1879. He served in a number of military and boundary expeditions, was in South Africa during the Boer war, and was the British staff officer for the reorganization of the Macedonian gendarmes, 1904-6. In the year before the late war he was brigadier-general in command of the artillery of the third division and after 1914 he was military attaché at Brussels, The Hague, Copenhagen, and Christiania.

FALCONBRIDGE, Sir GLENHOLME. Canadian jurist, died, February 8. After 1900 he was chief justice of the King's Bench in Ontario, and after 1916, president of the high court division of the Supreme Court. He was born, May 12, 1846, and studied at the University of Toronto, graduating with honors. He was lecturer in that university and was admitted to the bar in 1871. In 1885 he was made Queen's Counsel. He served on several important royal commissions.

FAKLAND ISLANDS. A British crown colony consisting of a group of islands in the South Atlantic, comprising East Falkland, with an area of 3000 square miles; West Falkland, with an area of 2300 square miles; and about a hundred small islands with an area of 1200 square miles; making a total of about 6500 square miles. Included under its administration is the vast area described in the succeeding article on **FAKLAND ISLANDS, DEPENDENCIES OF.** The estimated population in 1918, including the whaling station of South Georgia was 3252 with a birth-rate of 25.31 and a death-rate of 3.99 per thousand. The chief town is Stanley, with an estimated population of 950 inhabitants. Education is compulsory; the total number of pupils in 1918 was 319. The principal industry is sheep-farming, but horses and cattle are also raised. The following information was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: The Falkland Islands are by no means cold and barren rocks devoid of interest and opportunity. On the contrary, the fine, healthful climate and the almost immediate rewards for settlers should render them attractive to hardy and enterprising men and women who are not afraid of work. Swept by westerly winds three days out of every six, the islands are invigorating, but not so cold as the Scottish coasts and islands, which they closely resemble. Ice and snow are infrequent; flowers and plants such as poppies, daisies, veronica, violets, strawberries, and all kinds of vegetables flourish here. The inhabitants of East and West Falkland, and South Georgia (centre of the whaling industry), the South Shetlands, and South Orkneys number about 3000. Practically all are British, with the exception of Norwegians engaged in whaling.

Foreign trade in 1918, was as follows: Exports, £2,054,286; imports, £939,937. Leading

exports were whale products and wool and the leading imports, provisions, timber, coal, wearing apparel and hardware. In 1919 the trade of the United Kingdom was as follows: Exports to the United Kingdom, £1,891,409; imports £487,787. In 1918, the revenue was £46,365 and expenditure £20,270. The islands are under a governor, aided by an executive council and a legislative council. Governor at the beginning of 1920, Sir W. Douglas Young.

FAKLAND ISLAND, DEPENDENCIES OF. The addition of an extensive and important Antarctic colony to the countries of the world, is due to the economic provision of the British government, which recognized the material importance of controlling the animal life of the great southern ocean. In July, 1908, Great Britain, by proclamation, added to its domain, a great no-man's region of the Antarctic zone. As set forth in the proclamation this region is: "Situated in the South Atlantic Ocean to the south of the 50th parallel of south latitude and lying between 20° and 80° west longitude." Officially designated as the Dependencies of the Falkland Islands, this organized domain has an area of land and sea of about 3,000,000 square miles, slightly greater than the area of the United States, 1½ per cent of the surface of the globe. According to official report this area "comprises the only Antarctic or sub-Antarctic regions containing good harbors open all the summer." It includes the following lands and islands: South Georgia, South Shetland Islands, Graham Land and adjacent islands, South Orkney Islands, Coats, Leopold and Caird Lands, and presumably all unknown seas and lands of the above region to the South Pole.

GOVERNMENT. The Dependencies are subject for laws, administration, etc., to the control of the officials of the Falkland Islands, whose governor, by and with the consent of the council, makes laws. The Supreme Court has legal jurisdiction, and appoints such magistrates and other officers as are needed. Excepting the meteorological staff at South Orkneys, the only permanently inhabited land is South Georgia, where a stipendiary magistrate, customs, and police officers are located to supervise the whaling industry, which is carried on throughout the year. A magistrate is sent with each whaling expedition operating elsewhere. The revenues and expenditures are handled by the treasury of the Falkland Islands. In 1917, the last complete year, the revenues were 15,366 pounds sterling, and the local expenditures, 776. The revenue is derived from rents, license fees, and taxation of whale oil.

WHALING INDUSTRY. This whaling ground in recent years has been more productive than all other combined seas of the world. Although many whales can be caught outside of the territorial waters, the catch can be commercially profitable only by the use of harbors. In South Georgia there are eight companies holding fishing licenses for 21 years, but in 1914-15 there were 14 additional companies holding whaling licenses for one year. The catch and produce for the last three available years were: 1915-16, 11,792 whales, 558,805 barrels of oil; 1916-17, 6474 whales, 36,087 oil; 1917-18, 4313 whales, 258,476 oil. The total value of the whale fishery during the three years were, in pounds sterling, respectively: 1,923,247; 1,494,351; and 1,566,000: these were customs values, considerably be-

low market prices. The catch of 1917-18 in other seas of the world produced only 100,000 barrels of oil, less than 40 per cent of the Antarctic catch. It is to be added that the values, in pounds sterling, of the catch of seal, sea-elephants, and sea-leopards were: 2904 animals, 16,000 value; 1917, 3018 animals, 26,485 value; 1918, 6137 animals, 30,685 value. The catch of the humpback whales fell off from 96.8 per cent in 1910-11 to 9.3 per cent in 1916-17, which has caused Great Britain to take up the question of conservation in sea life of these regions. The Secretary of Colonies therefore appointed an Interdepartmental Committee on research and development of the Dependencies. This body of experts thoroughly examined all available knowledge, and pursued their researches along scientific and economic lines relative to both land and sea resources. Their report covered such points as seemed needful to stimulate development and to ensure continued and profitable fishing. They indicated methods necessary for the conversation of seal and whale life in the seas, and to ascertain the mineral resources and their possible exploitation,—especially of coal, copper, and sulphur. Two research ships were recommended, for the purpose of thorough study of whale life, as to birth, maturity, migration, etc.

FARM BUREAU FEDERATION, AMERICAN. See AGRICULTURAL EXTENSION.

FARMERS' INSTITUTES. See AGRICULTURAL EXTENSION WORK.

FARM LAND VALUES. See AGRICULTURE.

FARM PRICES. See AGRICULTURE, DAIRYING, LIVE STOCK.

FARM TRACTORS. See AGRICULTURE.

FARM TRUCKS. See AGRICULTURE.

FARM WOMEN. See AGRICULTURAL EXTENSION.

FARMS. See AGRICULTURE.

FARMS, IN THE UNITED STATES. See AGRICULTURE.

FARRER, REGINALD. British traveller, botanist, and writer, died in the course of an expedition in the regions between Northern Burma and Tibet, October 16. He was born Feb. 17, 1880, and graduated with honors at Oxford. He traveled in Japan, China, and other countries of the Far East and in Canada in 1903, and thereafter made annual journeys of botanical explorations in the Alps. He visited Ceylon in 1907 and traveled in the Near East in 1912. He journeyed in Northern China, across the Tibetan border, 1914-16, and after his return was employed as clerk in the foreign office. Among his books may be mentioned, Novels: *The House of Shadows, The Sundered Streams, The Waves of Rebellion*. Horticulture and travel: *My Rock Garden, Alpines and Bog-Plants, Among the Hills, The Garden of Asia, On the Eaves of the World*. Drama: *The Dowager of Jerusalem, Vansanta, the Beautiful*.

FAY, EDWIN WHITFIELD. Classical scholar, died Feb. 17. He was born at Minden, La., Jan. 1, 1865; studied at Johns Hopkins and at Leipzig, Germany. He was instructor in Sanskrit and the classics in the University of Michigan, 1890-1. After serving temporarily as professor of Latin at the University of Texas, he was professor of Latin at the Washington and Lee University from 1893 to 1899, when he became professor of Latin at the University of Texas. Besides contributing to the classical journals, various essays on Sanskrit, classical philol-

ogy, and linguistics, he published an edition of *The Mostellaria Plantus* (1902).

FEDERAL COUNCIL OF THE CHURCHES OF CHRIST IN AMERICA.

This council is a federation of 31 constituent denominations, embracing approximately 140,000 local churches and more than 18,000,000 communicants, for the purpose of rendering more effective coöperative service. It was organized in 1908 by the official action of the evangelical denominations and since that time has been building up an organization through which they can speak and work together in matters of common interest and purpose. It is made up of officially appointed representatives of the various constituent bodies. In addition to maintaining national offices in New York, Washington, and Chicago, the Council operates through several permanent commissions, including the following: Commission on Evangelism, Commission on the Church and Social Service, Commission on Christian Education, Commission on Temperance, Commission on International Justice and Goodwill, Commission on Relations with the Orient, Commission on Relations with Religious Bodies in Europe, Commission on Relations with France and Belgium, Commission on Interchurch Federations. The Commission on Evangelism has during the past year promoted united campaigns of evangelism in the more important cities of the country, assisting the churches of the community to organize their own resources for this purpose. The Commission on the Church and Social Service has done special work in studying the relation of the Church to present industrial unrest, having established a Department of Research and Survey for the purpose of enabling the churches to function more effectively in this field. It also does important work in helping to relate the churches to organizations for community and national service. The Commission on Temperance continues to carry on an educational programme, coöperating with sixteen other prohibition movements. The Commission on Relations with the Orient is making important investigations and studies in the interest of furthering better understanding between the United States and China and Japan. The Commission on Relations with France and Belgium is coördinating the relief and reconstruction work of several of the denominations in areas devastated by the war. The Commission on Relations with Religious Bodies in Europe affords to the Protestant churches of this country contacts with church movements in European countries. The Commission on Interchurch Federations has assisted in the formation of more than 40 local federations of churches for more effective community service.

During the war a special body created by the Council, known as the General War-Time Commission of the Churches, rendered conspicuous service in coördinating the war work of the various Protestant denominations. When it was discontinued in 1919 it appointed a committee on the war and the religious outlook, made up of a few representative leaders from each of the larger Protestant churches, to study the present state of religion as revealed or affected by the war. This Committee has issued several publications, including reports on "Religion Among American Men; as Revealed by a Study of Conditions in the Army," "The Missionary Outlook in the Light of the War," "The Church

and Industrial Reconstruction," and "Christian Unity; Its Principles and Possibilities."

The Department of Religious Publicity issues a monthly paper known as the *Federal Council Bulletin*, and furnishes general religious news to the secular and the religious press. The central office of the Council is at 105 East 22nd St., New York City. Its present officers are: Robert E. Speer, President; Rivington D. Lord, Recording Secretary; Alfred R. Kimball, Treasurer; Charles S. Macfarland, General Secretary.

FEDERAL TERRITORY. A territory under the Commonwealth of Australia, situated within the state of New South Wales; area, about 940 square miles; population estimated in 1919 at about 2573. It was acquired by the Commonwealth in 1910 from New South Wales, for the new federal capital, which was to be situated at Yass Canberra. The capital was founded in 1913, under the name of Canberra.

FEDERATED AMERICAN ENGINEERING SOCIETIES. See **ENGINEERING**.

FEDERATED MALAY STATES. The states comprising a large part of the Malay peninsula, namely Perak, 7800 square miles, population (1911), 494,057, capital, Taiping; Selangor, 3156 square miles; population, 294,035; capital, Kuala Lumpur (the largest city, with a population of about 60,000); Negri Sembilan, 2550 square miles; population, 130,199; capital, Seremban; Pahang, 14,000 square miles; population, 118,708; capital, Kuala Lipis; making a total of 27,506 square miles with a population in 1911 of 1,036,999, of whom 420,840 were Malays, 433,244 Chinese, and 172,465 natives of India. The estimated population in 1918 was about 1,280,000. The total number of immigrants that arrived from southern India was 65,291 in 1918, as against 90,077 in 1917, showing a decrease of 24,786. Of these, 55,583 were classed as laborers and the remainder as traders, etc. The number of laborers of all races employed upon estates on Dec. 31, 1918, was 201,964. The total number of laborers and the number of Indians, respectively, reported to be employed on the estates of the Federated Malay States at the end of each of four years, 1915 to 1918, were:

Years	Total laborers	Indian laborers
1915	170,741	126,347
1916	196,123	138,295
1917	220,758	148,834
1918	201,964	139,480

The number of Indians employed decreased by 9354 in the course of 1918, while the number of Chinese decreased by 12,138. In 1918 there were a number of British schools assisted or maintained by the government with an average enrollment of 6045 boys and 1577 girls, and an average attendance of 5620 and 1457 respectively. The total number of schools in 1918 was 520, with 31,502 pupils enrolled.

The revenue of the states in 1918 was £7,895,700, and the expenditure £5,283,473. The balance to the credit of the Federated Malay States on Dec. 31, 1918, was \$61,566,380. The leading items of revenue in 1918 in the order of their importance were as follows: Customs, licenses, railways, interest, land, revenue, and fees of court or office; and of expenditures, railways, miscellaneous services, including war contribution, personal salaries, and public works. Public debt in 1918, £1,750,000. The chief products are cocoanuts, rice, rubber, tapioca, pepper, sugar,

gambier, nipa palms; and the chief industrial enterprises are the cultivation of rubber and tin-mining. In 1918, 914,980 tons of timber of all kinds were taken from the forests and the gross revenue of the Forest Department was £120,998. There is considerable mineral wealth, including gold, tin, lead, copper, iron, mercury, arsenic, manganese, and a variety of others. The revenue from the mining industries in 1918 was £7,928,917. The country has owed its development chiefly to the rubber trade. The following statistics of the foreign trade are supplied by the United States Bureau of Commerce:

Generally speaking, 1919 was a year of great prosperity for the Federated Malay States, exports from the colony greatly exceeding imports in value, although imports showed a substantial increase. The ratio of advance in value of imports and exports was, respectively, 37 and 25½ per cent. Total values, excluding bullion, were: Exports, \$139,567,552; imports, \$59,427,482; excess of exports, \$80,140,070. The following table, showing the excess of exports over imports since 1912, is of interest for comparative purposes:

1912	\$40,500,000	1916	\$75,000,000
1913	32,000,000	1917	99,000,000
1914	25,000,000	1918	74,500,000
1915	50,500,000	1919	80,140,070

Imports of live animals, food, drink, and narcotics into the Federated Malay States were valued at \$36,129,183 in 1919 and at \$21,867,273 in 1918. Corresponding figures for 1915 were some \$17,500,000 less than the 1919 returns. Exports under the same classification were valued at \$521,742 in 1919, compared with \$849,661 in 1918 and \$991,530 in 1915. Imports of raw materials were returned as \$5,552,638 in 1919 and \$3,810,442 in 1918. Similar exports aggregated \$135,520,837 in 1919 against \$107,440,707 in 1918. Textile materials, which are included in raw materials, imported in 1919 were worth \$26,087, and exports under that heading during the same year amounted to \$1073. Metal imports totaled \$222,113 in 1919, \$330,646 in 1918; metal exports during these two years were valued at \$37,780,681 and \$47,508,736, respectively. The other trade items under raw materials consisted principally of rubber and copra. Manufactured articles imported in 1919 were valued at \$17,722,697, compared with \$11,612,440 in 1918; exports under the same heading were valued at \$21,909 in 1919, compared with \$20,828 the previous year. The balance of the foreign trade returns is made up of miscellaneous articles. High Commissioner in 1920, Sir Lawrence Nunns Guillemard.

FEDERATION OF LABOR, AMERICAN. See **LABOR, AMERICAN** **FEDERATION OF**.

FENCING. The New York Athletic Club won the national team fencing championship, being victorious in 12 bouts out of 15. The Fencers' Club of New York finished second, winning seven bouts and losing 11. The Washington Army Fencers' Club won five bouts and lost 10.

Sherman Hall of the New York A. C. won the individual foils and sabre championships and Ray S. Dutcher, also of the N. Y. A. C., captured the epee title. The national junior epee championship went to Millard J. Bloomer, Jr., while W. T. Gotschall carried off the laurels with the sabre. The national women's foil championship resulted in a tie between Miss Adeline

Gehrig, Miss Alice Glienke, and Mrs. C. H. Voorhees, each winning four bouts and losing one. The U. S. Naval Academy won the inter-collegiate championship, the individual titles being distributed as follows: Foils, J. F. Leicester, Yale; sabre, E. G. Fullenwider, U. S. Naval Academy; epee, C. M. Deland, Yale.

FERTILIZERS. A characteristic feature of the general fertilizer situation during the year in the United States was the continued prevalence of high prices of mixed fertilizers despite a decided break in the prices of raw materials. The situation was such as to lead the United States Department of Agriculture, acting under authority of the Lever Food Control Act, to issue Dec. 10, 1920, a statement to the effect that the prices quoted by fertilizer manufacturers for fertilizers for the spring of 1921, were too high and should be materially reduced, and warning the manufacturers that otherwise "it will be necessary for the individual farmer who uses fertilizers to exercise unusual care in shaping his operations so as to avoid undue risk of financial loss in his efforts to maintain normal production of essential crops." It was further pointed out in this statement that "the consuming public is vitally concerned in this matter for the reason that the maintenance of high prices for fertilizers at a time when the prices of farm products have greatly declined may result in a curtailment of the use of fertilizers and a reduction in acreage and in yield per acre of crops planted."

World statistics of fertilizer production, consumption, and trade during 1919 are very incomplete and unreliable. It is estimated that the annual consumption in the United States is about 7,000,000 tons. The consumption in other countries can not be given, but with the return of peace there has been a world-wide and increasing demand for fertilizers, particularly from European countries, as well as from Japan, Australia, and South Africa, and notwithstanding the large total consumption of fertilizers in the United States, the amount used per acre of cultivated land is much smaller there than in many other countries. The use of fertilizers might be profitably extended in the United States, especially in view of the urgent necessity for greater farm production per unit of labor.

Profiting by the lessons of the war, the leading nations of the world are seriously planning ways and means of making themselves as far as possible self-sustaining as regards fertilizers. Consequently there was great activity during the year in developing the mining of phosphates, especially in North Africa, and restoring and developing that of potash in Germany and France, and in the manufacture of synthetic nitrogen compounds in various European countries. Much attention was also given, especially in England, to salvaging and utilizing the munitions plants and products acquired during the war for fertilizer purposes.

As regards phosphates and potash, the world's potential supply of raw materials is abundant and practically inexhaustible, and potash should soon be available at moderate prices. The nitrogen supply is more uncertain and precarious. The supply of Chilean nitrate is still large, but cannot be indefinitely depended upon. Besides, it is remote from the great centres of use. The practicability of manufacturing nitrogen compounds from the air has been fully demonstrated,

but commercial production is still comparatively small. The leading countries of the world, however, recognize the necessity for nitrogen independence in peace as well as in war. Germany had established such independence before the war. The Scandinavian countries have also been large producers of synthetic nitrogen for some years. Now England, France, and Italy are perfecting plans to make themselves secure in this respect.

The plants constructed by the United States during the war for the manufacture of nitrogen compounds remain incomplete and idle. The completion and operation of the plant at Muscle Shoals, Alabama, for the manufacture of nitrogen compounds for use as fertilizer were under discussion in Congress at the close of the year. This enterprise has been opposed by fertilizer manufacturers as "an unwarranted invasion by the Government in a field of private endeavor." It would seem, however, that with the practicable recovery of ammonium sulphate from by-products, coke ovens and gas works wholly inadequate for our fertilizer needs, with organic sources of nitrogen like tankage and cottonseed meal finding more profitable use than as fertilizer, and the Chilean supply of nitrate of soda remote and at best precarious, the world will be forced to look to nitrogen fixation as the only assurance of adequate supplies of nitrogen compounds, and that in such a vital matter this country cannot afford to fall behind the rest of the world whether this great end is attained through government or private agencies.

The Department of Agriculture is coöperating with the War Department in developing and improving the Haber process of nitrogen fixation, supplementing this work with an effort to devise practical means of making more concentrated fertilizers containing not only nitrogen, but also phosphoric acid and potash, than are now generally manufactured. This is in line with the general movement, which has received considerable impetus in recent years, to increase the use of high-grade concentrated fertilizers.

The Department of Agriculture announced during the year that the Bureau of Soils had developed to a high degree of efficiency a process for reducing low-grade phosphates, briquetted with sand and coke, in an oil-burning furnace, securing in this way a high rate of recovery of phosphoric acid and permitting the production of soluble phosphates for fertilizer purposes at a cost comparing favorably with that of the manufacture of superphosphate by treatment of raw phosphates with sulphuric acid. Distinct advantages claimed for the process are that it utilizes "mine run" material and thus eliminates the enormous waste of phosphate and the costly plants involved in the acid process, and gives a much more concentrated product, thus reducing the cost of transportation and handling. Tests of the process have been made on a semi-commercial scale, and it is believed have gone far enough to give a rough approximation of what may be expected of the process although the final proof of its commercial practicability still remains to be made.

An abundant supply of potash and low prices seem to wait on adjustment of trade relations and conditions. Germany is anxious to make its abundant supply available to the world; France is rehabilitating and developing the large and rich Alsatian deposits; the dry lakes of the

United States are yielding no inconsiderable supply; some potash is being collected from the dust and fumes of cement works and blast furnaces; and material progress has been made toward the solution of the problem of the profitable manufacture of potash from the Pacific coast kelps. Composting with manure and sulphur has been shown to increase the availability of the potash in greensand, and at least one plant is reported to be engaged in an attempt to manufacture potash salts from this material.

The injury to crops by potash fertilizers containing unusual percentage of borax has resulted in much careful investigation as to the limits of safety in the use of such fertilizers. It has been found that the injury varies not only with the amount of borax present, but also with the method of application, kind of soil, character of the season, and the crop grown. Extensive experiments by the Bureau of Plant Industry of the United States Department of Agriculture indicate that "corn and beans are especially sensitive to borax and begin to show reactions from two to five pounds of borax per acre, according to conditions, while potatoes and cotton show reactions from five to 20 pounds. When broadcasted, larger amounts are required to show injury than when drilled, and copious rainfall after application of the borax fertilizers in all cases decreases greatly the injury due to borax."

A number of practical applications of the well established fact that increasing the carbon dioxide content of air surrounding plants in many cases materially stimulates their growth was reported during the year. Particularly striking results on a rather extensive scale were obtained at Essen, Germany, by using for this purpose blast furnace gases freed from poisonous substances. This work suggests a possibility and means of increasing agricultural production in industrial centres.

FICTION. See LITERATURE, ENGLISH AND AMERICAN.

FIJI ISLANDS. A group of about 250 islands in the Southern Pacific, constituting a British crown colony. About 80 of the islands are inhabited and the largest of them is Viti Levu, with an area of 4053 square miles, and another large island is Vanua Levu (2130). Total area, including the island of Rotuma (a dependency since 1880), 7083 square miles—according to other authorities, 7435 square miles. The population in 1911 was 139,541; estimated Jan. 1, 1919, 165,991, of whom 9103 were Fijians and 61,153 were Indians. The Europeans in 1916 numbered 4552. The chief crops are sugar, coconuts, rice, copra, pineapples, and other fruits. The total trade for 1918 was £2,822,433 of which imports were £1,166,367 and exports £1,656,066. British possessions received 72.74 per cent of the total trade and the United Kingdom 4.28 per cent. There was an increase of trade with foreign countries, especially with the United States, which was the only market that received copra exports in 1918. Revenue for 1919, \$2,019,597, as compared with \$1,543,600 for 1918; expenditures for 1919, \$2,142,389, as compared with \$1,580,435 for 1918. Steamship lines connect the islands with Australia, New Zealand, Tonga, Samoa, Honolulu, and Canada. Total tonnage of merchant shipping entered and cleared (1918), 658,813, of which 607,067 were British. It is under a governor appointed by the Crown and aided by an executive council.

Governor and high commissioner for the Western Pacific in 1920, Sir Cecil Hunter Rodwell.

FILTRATION. See WATER WORKS AND WATER PURIFICATION.

FINANCIAL REVIEW. GENERAL CONDITIONS. Following another year of inflation, a period of general reaction in the business world was realized in 1920. Although the change in the industrial situation really began some months earlier, as rising labor and material costs began to burden industry, it did not become general before spring, when production seems to have passed its peak. In this country the situation was possibly rendered more acute by transportation difficulties early in the year, which prevented movement of goods to market in time to meet demand at the best prices. Meanwhile, in protest against high retail prices, particularly of clothing, the so-called "buyers' strike" began to develop. Serious economic disturbances, however, came first in other quarters, ushered in by the collapse of the Japanese silk market. (See JAPAN). Subsequently, trouble developed in the sugar and coffee markets, in which there had been a gigantic speculation for the rise. The producing countries suffered, and Cuba (q.v.) resorted to a moratorium in October. Meanwhile, prices of leather, cotton, and wool were sagging, and depression developed in those industries. After the mid-year, which may fairly be regarded as the turning point, price declines became more general and more extensive in the wholesale markets. Unfilled orders of the United States Steel Corporation declined steadily. The field of depression widened, unemployment developed, and wage reductions were announced in many lines. The Bureau of Labor Statistics index of wholesale prices declined regularly from the high point of 272 (as compared with 1913) reached in May, to 189 in December. However, the decline in retail prices was much less rapid, and the consumers' demand remained inadequate to revive industry. Although the money value of merchandise exports was well maintained throughout the year, both business conditions and the exchange situation in Europe militated against efforts to obtain further relief through export of the accumulating surplus. Imports of foreign merchandise declined steadily in the second half-year, reflecting both the stagnant condition of industry abroad and the declining buying power of this country.

Farm crops were above the average in quantity; the total yield of corn was never greater, the cotton crop was the largest since 1914, and the wheat crop has seldom been surpassed. Prices, however, were much below levels expected when the crops were being made. Corn and cotton in October were scarcely half their May prices, and the price of wheat had then lost more than a quarter, despite a concerted effort to withhold the crop from the market. Under these conditions the farming interests appealed to the government for relief, and succeeded in having a bill passed by Congress to revive the War Finance Corporation—which found no business it could do. A protective tariff on farm products and special consideration from the Federal Reserve Board and banks were also demanded, but without immediate avail. See AGRICULTURE.

BANKS AND BANKING. The development of the year afforded a test of the power of Federal Reserve banks to control and regulate credit. As the special influences affecting discount policy

during the war period gave way to more purely banking considerations, rates were advanced during the first half-year until the general level approximated 6 per cent on war paper and bankers' acceptances and 7 per cent on commercial paper. Under an amendment to the Reserve Act passed April 13, four banks initiated progressive discount rates with a view to equalizing opportunities for the use of their discount facilities. Perhaps because of the exemption of war paper from the progressive rates, their use did not prove to be particularly effective. Rising discount rates no doubt somewhat restricted the tendency toward further expansion, but did not prevent a continued upward trend of holdings of discounted paper by reserve banks. Holdings aggregated \$2,231,000,000 on January 2 and then declined to the year's low of \$2,080,000,000 on January 9. Thereafter holdings increased in a series of upward and downward swings to the high level of \$2,827,000,000 on November 5, and stood at \$2,719,000,000 on December 30. Meanwhile the proportion of war paper declined quite regularly from 66.5 per cent to 42 per cent under the influence of higher rates of discount and of interest on government certificates of indebtedness, which helped to give them lodgment in the hands of investors. Acceptances purchased declined almost constantly from \$575,000,000 on January 2 to \$256,000,000 on December 30, chiefly owing to the increased demand by saving banks and other investors. Total earning assets were \$3,182,000,000 on January 2; \$2,984,000,000 a week later; \$3,422,000,000 on October 15; and \$3,263,000,000 at the end of the year.

Gold holdings declined from \$2,063,000,000 on January 2 to \$1,935,000,000 on March 26 and then rose to \$2,059,000,000 on December 30. These movements were chiefly connected with gold imports and exports. Total cash reserves fell off from the opening figure of \$2,121,000,000 to \$2,035,000,000 on February 20 and then increased to their high figure of \$2,249,000,000 at the close of the year, owing chiefly to Treasury deposits of silver. The ratio of total reserves opened at 43.7 per cent, fluctuated between 42.2 per cent and 45.5 per cent and closed at 45.5 per cent. Eight reserve banks temporarily incurred the statutory penalty for reserve deficiencies, the New York bank being the principal offender.

The general reserve situation resulted in an increasing amount of inter-reserve-bank accommodation, whereby surplus resources of some banks were made available to those upon which demands were heavier. These inter-bank re-discounts and purchases aggregated \$3,673,000,000 and were further increased in effect to \$4,404,000,000 as a result of participation by the Cleveland, Chicago, and San Francisco banks in the daily open market purchases of the New York bank. Federal reserve note issues increased during the year from \$2,999,000,000 to \$3,345,000,000. Apparently member banks used the proceeds of their increased borrowings chiefly in the form of notes.

Between the end of 1919 and November 15, 1920, national bank resources decreased \$629,000,000 to \$22,082,000,000. Total deposits declined \$905,000,000 to \$16,962,000,000; demand deposits declined \$226,000,000; and net deposits fell off \$332,000,000. Reserve balances and cash declined from a total of \$1,821,000,000 to \$1,666,000,000, while total borrowings (chiefly at Federal Reserve banks) increased \$479,000,000 to

\$2,391,000,000. Loans and discounts (including re-discounts) increased \$525,000,000 to \$12,312,000,000.

The best evidence available of current banking movements was that afforded by the weekly returns to the Federal Reserve Board of some 800 national and State member banks in leading cities. War loans and war paper held by these banks declined from \$3,027,000,000 to \$2,033,000,000 during the year. Loans on other stock and bond collateral declined from \$3,391,000,000 to \$2,998,000,000 in August and then rose to \$3,176,000,000. All other loans and investments, which represented largely commercial loans, gradually increased from about \$10,000,000,000 to a maximum of \$11,774,000,000 on October 8, and then declined to \$11,274,000,000 at the end of the year. This was the clearest evidence we had of banking liquidation. However, the proportion of total loans and investments financed by borrowings at reserve banks increased during the year from 11.2 per cent to 12.5 per cent. Net demand deposits (other than government) declined \$657,000,000 during the year to a total of \$10,942,000,000, largely as a result of withdrawals by country bank correspondents.

During the year another State foreign banking corporation submitted its operations to the regulation of the Federal Reserve Board, making a total of ten such corporations having capital and surplus aggregating \$52,875,000 and total resources (at the head offices) of \$313,486,000. Two Edge Act corporations were formed under Federal law with a total capital of \$9,100,000, and another \$100,000,000 corporation was in process of formation at the close of the year. The membership of the Federal reserve system was increased by the admission of 306 state banks. On June 30, 1920, the system contained 77.5 per cent of all eligible banks in the country, and its members held 70 per cent of all banking resources of the United States in other than mutual savings and private banks.

MONEY RATES. On the New York market were generally rising through the first six months of the year and thereafter maintained high levels, softening a little toward the close. Rates on commercial loans in the main followed the lead of the Federal Reserve banks. Ninety day acceptances ranged from 5 per cent to 6½ per cent, while prime commercial paper rose from 6 per cent to 8 per cent during the first half year and thereafter held at the higher figure. Call money rates showed wide fluctuations on relatively high levels throughout most of the year. Only in the last week of November did the rate touch the low point of 5 per cent. The year closed at 7 per cent, but rates from 14 per cent to 25 per cent were recorded in each month down to July, and thereafter 10 per cent was reached in each month except December. Time collateral money ranged from 7½ per cent to 10 per cent, and during a considerable part of the year was practically unobtainable.

BANK CLEARINGS. Clearing house transactions in 199 cities during the year ending September 30, 1920, were \$463,000,000,000, or nearly 20 per cent greater than those recorded for the previous year. In New York City clearings were \$252,000,000,000; in Chicago \$33,000,000,000; in Philadelphia \$25,000,000,000; in Boston \$20,000,000,000; and in Kansas City \$12,000,000,000. Debits to individual account as reported by 150 clearing houses showed total debits of \$482,000,-

000,000 in the calendar year 1920 as compared with \$455,000,000 in 1919. Monthly figures showed a large increase of debits over those of 1919 during the first four months; while in the second half-year appreciable reductions in the amount of debits occurred in each month.

STOCKS AND BONDS. Shares sold on the New York Stock Exchange numbered 223,080,000 as against 316,202,000 in 1919. Sales of about 29,000,000 shares were recorded in March and again in April, but the volume declined to 9,000,000 shares in June, rising again to 22,000,000 in November and December. There were 83 million share days, a figure exceeded only in 1905, 1906, and 1919, and there was one two million share day. Bond sales on the exchange aggregated \$3,913,000,000, or \$110,000,000 more than in 1919. Monthly sales exceeded those of 1919 in all but four months, and reached a maximum of \$512,000,000 in December, when losses were being registered for income tax purposes. The record high price of seats was reached at \$115,000, but there were sales as low as \$77,500.

The year was one of liquidation in stocks although the decline of prices was kept within moderate limits until after the mid-year. Money stringency, with high rates for call loans and scarcity of time money, was the immediate factor in fluctuations, but the industrial situation was in fundamental control of the market. The Transportation Act and the return of the railroads to their owners furnished the occasion for a March rise in the average price of twenty-five railroad stocks to 60.19. In the late summer freight rate advances served a like purpose, but the general business outlook brought about reaction to December's closing price of 54. The average price of 25 industrials showed an early spring advance, but has since receded almost one-third to 91, thus giving evidence of relative greater weakness than rails. The average price of 40 bonds receded until July and then rose to the year's maximum in October, and closed the year at 68½, about three points under the opening.

Issues of new domestic corporate securities in 1920 aggregated \$3,107,000,000, of which \$1,157,000,000 were stocks. Total issues exceeded those of 1919 by \$86,000,000. Of the total, \$416,000,000 were offered by railroads and \$2,691,000,000 by industrial concerns. The amount of new long-term municipal bonds issued was \$653,000,000, while loans of foreign companies and corporations placed here aggregated \$345,000,000. It would thus appear that the grand total of security issues in this country in the year 1920 exceeded \$4,000,000,000.

BUSINESS FAILURES. After four years of diminishing commercial mortality, the number of failures during the year increased by 3,080 to 8,595. This number is lower than that of any of the past 37 years except 1919, while the percentage of failures to the number of firms in business was .44 as compared with the previous year's low record of .29. The number of failures increased month by month from May to December, which showed the largest monthly total since January 1916. Important failures began among export and import concerns, and then appeared in the raw silk trade, followed by the apparel trades generally. Later in the year the shipbuilding and automobile industries were affected, and finally a considerable number of bank suspensions occurred in the northwest. Although

the year's liabilities were \$417,000,000, which was the highest ever shown in *Bradstreet's* record, the percentage of assets to liabilities (64.6) was larger than in any other recorded year except 1907. Moreover, our banking organization again proved its ability to weather a serious business crisis without panic, and therefore to limit the scope of the difficulties. R. G. Dun and Company, showed that 1078 companies in Canada and Newfoundland went into insolvency during the year, as compared with 755 in the previous year. Liabilities of these companies totaled \$26,494,301, or an average of \$24,577, while in 1919 liabilities were \$16,256,259, or an average of \$21,531. The number of failures in 1920 was the third lowest since 1904, but the amount of liabilities was the third highest in that period. The greatest number of failures in 1920, and of the largest companies, took place during the latter part of the year.

FOREIGN EXCHANGE. The foreign exchange market was under the continued influence of unbalanced budgets and heavy import balances in the principal European countries with the result that most currencies touched new low quotations during the year. The revival of European export trade, while relatively great in many instances, was in the aggregate far too slight to correct the downward course of the exchanges under pressure of a large overcharge of bills. The total merchandise export balance of the United States in 1920 was practically \$3,000,000,000, against which are to be offset net imports of gold aggregating \$106,600,000 and new foreign loans floated in this market amounting to nearly \$200,000,000 over and above mere refunding operations. It was estimated late in the year that Europe's unfunded indebtedness to the United States on account of goods purchased amounted to \$3,000,000,000 or \$4,000,000,000. Aside from this direct influence, the tone of the market in continental currencies was progressively injured by the failure of finance ministers to bring their budgets to a balance or even to prevent the increase of floating debt with its attendant inflation. Our export trade has suffered somewhat because falling exchange rates had increased the cost of American goods to foreign purchasers and also because of growing unwillingness of exporters to assume the credit risk involved in selling to many parts of Europe.

From around \$3.80 at the opening of the year sterling cables declined to \$3.50 near the end of January, and then fell precipitately to the year's low record of \$3.19 in the so-called February "exchange panic." A natural reaction followed, strengthened by the official announcement that Great Britain would meet her share of the Anglo-French loan maturing in October without refunding and would if necessary ship gold for that purpose. On this movement sterling rose to \$4.07 early in April, which was the high point of the year. Thereafter rates sagged irregularly but remained relatively high until midsummer. From \$3.55 in August the rate fluctuated considerably, going as low as \$3.34 in November, and closing the year at about \$3.50. In general, the sharp and sudden fluctuations of rates made exchange a difficult market in which to trade.

During the year quotations of continental currencies were generally shifted from the foreign to American monetary units. Converted to this basis the opening quotation of franc cables was

about 9.3 cents, or more than 50 per cent discount from the par of 19.3 cents. During the first quarter the franc followed in general the course of sterling but did not recover so well from the February panic and fell as low as 5.8 cents in April. The market was relatively strong during the early summer and rose to the year's high record of 8.6 near the first of July. Thereafter the decline was fairly steady, influenced no doubt by uncertainty as to the payment of the French share of the Anglo-French loan and by the continuance of unsatisfactory conditions in trade and public finance. The year's closing rate was under 6 cents.

The course of the Italian lira was similar to that of the franc, but its decline was more precipitate. From an opening of 7½ cents it fell to 5 in February, to 3¾ in April, and after recovering to 6¼ cents in July, sagged again to a close of 3¾ cents. Industrial and political disturbances played their part in these movements. German marks opened around 2 cents, fell to 1 cent in February, and under the influence of a strong speculative movement, got above 3 cents in May, only to fall again to a closing of 1½ cents.

Gold movements were particularly heavy between the United States and several foreign countries. From the United Kingdom we imported a net amount of \$275,000,000, from France \$49,000,000, and from Canada \$28,000,000. We sent \$100,000,000 to Japan, \$88,000,000 to the Argentine, and \$28,000,000 to China. The net result was an inward movement of about \$107,000,000. See UNITED STATES, FRANCE, GREAT BRITAIN, GERMANY, and other articles on countries; MONEY, PRICES, NATIONAL BANKS, SAVINGS BANKS, STATE BANKS.

FINLAND. Formerly a Grand Duchy of the Russian Empire; declared an independent republic Dec. 9, 1917, and since recognized by the Powers; situated in the northwest of Europe on the Gulfs of Finland and Bothnia. Capital, Helsingfors.

AREA, POPULATION, ETC. The area was given in 1915 at 125,689 square miles, but a later estimate placed it at 144,249 square miles; population (1915), 3,300,650; estimated 1918, 3,329,546. The urban population in 1918 was 520,827 and the rural, 2,809,319. Males numbered 1,644,964 and females, 1,684,182. The Finnish-speaking in 1915 numbered 2,565,742; Swedish, 344,366. The great majority are Lutherans (3,283,757). In 1917, Helsingfors (with Sveaborg), was reported as having 187,544 inhabitants, but an estimate in 1919 placed it at over 200,000. In 1917 Abo had 56,168; Tammerfors, 46,353; Viborg, 29,753; Vasa, 24,776; Vleaborg, 21,940; Kuopio, 18,106; Björneborg, 17,603. Marriages (1917), 20,004; births, 81,046; deaths, 58,863. The number of emigrants in 1919 was 1085, as compared with 1900 in 1918. Of this number, 538 were men and 547 were women; 253 were from towns (119 men and 134 women) and 832 were from the country (419 men and 413 women); while in 1918 the number of men was 1330 and the number of women 569, the number from towns was 384 (261 men and 123 women), and the number from the country 1516 (1069 men and 447 women). During the period from 1893 to 1918 the total number of emigrants from Finland was 267,755 (166,827 men, 100,955 women, 873 unclassified), most of whom went to the United States. The number of emigrants

from Finland during the war (1914-18) was 20,513. The number of emigrants who returned to Finland from 1909 to 1918 was 13,244, of whom 12,699 settled in the rural districts and 545 in the towns.

EDUCATION. Education is not compulsory, although a measure for making it so was under consideration in 1920. Every parish has at least one folk school or elementary school. There are also many secondary schools, most of which lead up to the University in Helsingfors, as well as many preparatory schools under private auspices and other schools of different kinds. In primary instruction the age is from seven to 15 years.

At the beginning of the 1919-20 school year there were 3639 ordinary rural folk-schools, of which 3172 were Finnish and 456 Swedish. The number of teachers in these schools was 4951, besides special teachers for manual training and girls' handwork. There were also 549 primary folk-schools in rural districts. The city folk-schools had 1351 teachers. The total of folk-school teachers was thus 6302, of whom 5448 were Finnish and 839 Swedish. The number of pupils in rural folk-schools was 173,869 and in city folk-schools 42,026, a total of 215,895. The amount expended by the state for folk-schools in 1919 was 38,390,000 marks (\$2,492,857 at 15.40 marks to the dollar). At the beginning of 1919 there were 55 state secondary schools, of which 37 were Finnish and 18 Swedish. There were also 99 communal and privately owned schools receiving state aid, of which 72 were Finnish and 27 Swedish. The amount expended by the state for secondary schools in 1919 was 16,074,300 marks (\$1,043,786).

The lack of teachers had become in 1920 a matter of grave concern in Finland, as in other countries. This lack was felt during the war, and afterwards increased alarmingly. It became particularly difficult to procure efficient instructors for private schools. The number of students preparing for the teaching profession also seriously decreased. There were only 22 students preparing for teaching during the spring term of 1919, whereas the corresponding number in 1915 was 101. The chief cause for this decrease was undoubtedly the insufficient salaries paid teachers, but a law has recently been passed increasing the salaries in the teaching profession.

The general tendency, especially in the private schools, is to have English instead of French as the second foreign language (German being the first). Russian, which was formerly compulsory in Finland, is now studied very little.

There is one state university, which was founded in Abo in 1640 and removed to Helsingfors after having been burned down in 1827. In 1918 it had 2563 students. There is a technical high school in Helsingfors and private high schools and academies in the larger cities. A Swedish university was opened in Abo in 1919.

PRODUCTION. Although the cultivated area is only about 8.5 per cent of the surface, agriculture is the main occupation. Among the chief crops are rye, oats, barley, wheat, potatoes, and hay. The production in 1919 was as follows in metric tons: Hay, 2,211,800; potatoes, 482,210; oats, 350,300; barley, 115,290; rye, 266,850; wheat, 8320. About 67 per cent of the population are engaged in industries connected with agriculture. The most important industries are

cattle raising and dairy-farming, and cattle and dairy products were the chief exports in pre-war times. The most valuable product, however, is the timber. Forests make up about 60 per cent of the area. In 1919 it was estimated that over 550 mills and factories were engaged in the timber or wood-working industries. In normal times, the timber exports exceed all others, but during the war they were greatly reduced. In the spring of 1920 the situation was improved and shipments on a large scale were beginning. The following figures supplied by the United States Bureau of Foreign and Domestic Commerce on the basis of official Finnish report, indicate the extent to which industry had recovered down to the close of 1919, but it is to be noted that the 1919 figures are only approximate. The industries which were working for domestic consumption were greater than the export industries, both in respect to the value of the production and in respect to the number of workmen employed. The gross value of the former in 1919 was about 1,654,700,000 marks (the normal value of the mark is \$0.193) and that of the latter only about 690,500,000 marks. The industries for domestic consumption employed 66,695 laborers and those for exportation 33,148. The industrial activity in Finland in 1919, as compared with that in 1913 and 1916, is shown in the following table, the money values being given in marks:

Item	1913	1916	1919
Working places	4,708	4,694	5,252
Laborers	109,229	109,900	99,843
Motive power, effective	310,252	379,742	418,892
Wages	107,760,700	150,777,100	399,667,800
Value of domestic raw materials	214,318,100	325,061,000	648,205,500
Gross value of the production	657,267,900	1,325,061,000	2,345,200,000

The foregoing figures show that the number of working places decreased in 1916, although the number of laborers increased. The gross value of the production considerably increased after 1913. The figures for 1919 show how Finnish industry was influenced by the exceptional circumstances prevailing during the insurrection and the war. The number of working places increased, but the number of laborers decreased about 9 per cent. The motive power in effective horsepower increased by about 9.1 per cent since 1916 and by 33.4 per cent since 1913. The total wages were 2.6 times higher than in 1916 and the value of raw materials doubled. On the other hand, production increased by only about 80 per cent, owing partly to the eight-hour day and the decreased working intensity.

COMMERCE. The foreign trade of Finland for 1919 amounted to 3,378,448,697 marks (\$219,379,785), of which 2,505,386,645 marks (\$162,687,444) represents imports and 873,062,052 marks (\$56,692,341) exports, compared with 731,454,131 marks (\$91,431,767) for 1918, of which 504,611,471 marks (\$63,076,434) represented imports and 226,842,660 marks (\$28,355,333) exports, and 900,233,264 marks (\$173,790,204) for 1913, of which 495,434,557 marks (\$95,643,736) represented imports and 404,798,707 marks (\$78,146,468) exports. Thus the excess of imports over exports was 1,632,324,593 marks (\$105,995,103) in 1919, 277,768,811 marks (\$34,721,101) in 1918, and 90,635,850 marks (\$17,497,268) in 1913.

The following table shows exports by countries in 1913 and 1919:

Countries of origin	1913 Dollars	1919 Dollars
Germany	39,099,330	10,195,144

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Russia	391,723	
Estonia	1,930,459	
Other Baltic states	133,171	
Ukraine	26,931,548	
Great Britain	11,710,506	43,925,496
France	1,873,217	751,520
Sweden	5,812,850	20,516,763
Denmark	5,666,630	17,947,534
Norway	110,712	3,730,509
Netherlands	2,029,366	5,240,260
Spain	500,328	896,071
Italy	331,470	87,747
Switzerland	206,971	913,578
Belgium	1,552,027	670,676
United States	712	41,486,720
Canada	281	1,985,121
Argentina	117,223	4,537,636
Brazil		2,988,799
Japan	72	1,126,752
Turkey	536	891,974
Asiatic Turkey	63	245,753
East India	326,486	1,009,824
Greece	21	955,100
Other countries	373,387	184,611
Total	95,643,736	162,687,441

The following table shows imports by countries of destination in 1913 and 1919:

Countries of destination	1913 Dollars	1919 Dollars
Russia		48,143
Estonia		1,753,918
Other Baltic states	21,872,851	102,801
Ukraine		809,872
Georgia		453,114
Caucasus		

Poland	(a)	436,034
Denmark	2,300,327	3,084,979
Sweden	3,237,050	4,407,837
Norway	800,791	280,888
Netherlands	4,053,510	5,143,502
Belgium	3,683,438	1,923,499
Germany	10,067,679	5,312,940
France	7,437,840	4,687,699
Spain	2,351,430	898,316
Italy	29,471	125,614
Greece		283,929
Turkey	11,403	355,194
Austria		5,225
Switzerland		96,190
Great Britain	20,958,476	24,402,850
United States		1,344,546
Argentina	8,680	469,520
Brazil		195,980
Chile		125,872
Algiers	204,886	36,169
Egypt	715,800	177,164
British South Africa	375,315	174,935
Other countries	537,521	105,616
Total	78,146,468	56,692,341

a No separate statistics for 1913.

FINANCE. The following table shows Finland's budget for 1920, the Finnish mark being converted to dollars at 20 marks to the dollar:

REVENUES	Marks	Dollars
Items		
Ordinary revenue:		
Revenue from state property	401,163,000	20,058,150
Direct taxes	327,163,000	16,358,150
Indirect taxes	452,010,000	22,600,500
Miscellaneous taxes	85,404,000	4,270,200
Revenue from national institutions (post, telegraph, etc.)	75,302,000	3,765,100
Sundry revenues	204,502,650	10,225,133
Balance from previous year	178,182,284	8,909,114
Total	1,723,726,934	86,186,347
Extraordinary revenue:		

Items	Marks	Dollars
Special property tax ....	.....	.....
State loans	104,500,000	5,225,000
Land fees	850,000	17,500
Bank of Finland profits ..	23,000,000	1,150,000
Sundry revenues	79,200,000	3,960,000
Total	207,050,000	10,852,500
Grand total	1,980,776,984	96,538,847

EXPENDITURES

Ordinary expenditure:		
The President	1,100,000	55,000
The Diet	4,282,000	211,600
The Government	7,262,800	363,140
Government administration	4,171,800	208,590
Foreign Ministry	9,690,900	484,545
Justice	47,745,600	2,387,280
Civil administration	73,912,950	3,695,648
Financial administration ..	16,175,600	808,780
Military expenditure	268,218,900	13,160,945
Religious and educational system	97,005,750	4,850,287
Department of Agriculture	66,809,600	3,340,480
Means of communication ..	329,805,300	16,490,265
Trade and industry	22,402,564	1,120,128
Department of Social Affairs	11,493,200	574,660
Sundry expenditures	188,120,000	9,406,000
Pensions and grants	20,075,800	1,003,765
Interest and payments of national debts	187,056,510	9,352,825
Ordinary grants—		
Grant for assisting unsettled population to buy land	800,000	15,000
Grant to the fund of district courts	154,160	7,708
Total	1,850,732,934	67,536,646
Extraordinary expenditure:		
The Government	500,000	25,000
Department of Justice	700,000	35,000
Civil administration	81,125,000	1,556,250
Financial administration ..	170,371,000	8,518,550
Military expenditure	81,700,200	4,085,010
Religious and educational system	751,700	37,585
Department of Agriculture	46,821,500	2,341,075
Means of communication ..	114,950,000	5,747,500
Trade and industry	19,520,000	976,000
Department of Social Affairs	29,617,500	1,480,875
Food control	5,800,000	265,000
Payment on national debts	78,687,100	3,934,355
Total	580,044,000	29,002,200
Grand total	1,930,776,934	96,538,846

The national debts of Finland, according to information furnished by the Government, amounted on May 31, 1920, to 1,812,911,411 marks (\$90,645,571 at the rate of 20 marks to the dollar). The state budget for 1921 was submitted to the Finnish Diet on Oct. 30, 1920. The total estimated revenues and expenditures for 1921 were 2,332,491,650 Finnish marks, whereas those for 1920 amounted to 1,930,776,934 Finnish marks, an increase of about 400,000,000 marks for 1921.

ARMY. The military system is based on the law of January, 1919, which provides for conscription. The army consists of three divisions and an independent brigade of troops of all arms with heavy artillery, air craft, motor and intelligence troops. Three coast artillery regiments serve for coast defense. In peace time, two classes serve for six months, including the summer, and one class serves in the winter half year. On a war footing, the forces may be several times increased, not only by filling up the ranks, but by additional formations. Besides the standing army, there is a Landwehr, comprising able-bodied men between 17 and 45 years of age; there is also a civil safety corps which was estimated at about 100,000. The strength of the

regular army was estimated at 36,600 and the volunteer army at about 105,000.

GOVERNMENT AND HISTORY. The independence of Finland was proclaimed by the House of Representatives, Dec. 6, 1917, and its independence was recognized afterwards by most of the Powers. The executive power is vested in the President, elected for six years by vote of the people; and the legislative power in a House of Representatives, elected by universal male and female suffrage, which remains in session for three years, unless sooner dissolved. Every person qualified to vote is eligible for election to the House of Representatives. The President at the beginning of 1920 was K. J. Stahlberg. The cabinet appointed March 15, 1920, was constituted as follows: Prime Minister, M. Erich; Minister for Foreign Affairs, Dr. Eino Rudolf Woldemar Holsti; Minister of Finances, M. Wartiowaara; Minister of Education, M. Ingman; Minister of Justice, M. Soederholm; Minister of the Interior, Baron de Hellens; Minister of War, Colonel Yallander; Minister of Commerce and Industries, M. Ehrenrooth; Minister of Communications and Public Works, M. Magnus Lavonius; Minister for Food Supplies, M. Aliganden; Minister of Agriculture, M. Pekkonen; and Minister for Social Affairs, M. Youkahainen.

The main interest during the first part of the year was in the relations with Russia, the dispute over the Aland Islands between Sweden and Finland, and the dispute over the two districts of East Carelia and Petchenga between Russia and Finland. On February 8th the Finnish Foreign Ministry declared that Finland had no grounds for military interference in the internal affairs of Russia. As to the Aland Islands, the subject is discussed under **WAR OF THE NATIONS** and it suffices here to say that Finland claimed them on historic grounds and Sweden on the principle of self-determination, the population being Swedish. The Government of Finland adopted in March a bill providing for self-government in the Islands and it was proposed that the central authority should be the League of Nations under a mandate. It was reported that such arrangements were satisfactory neither to the native population of the islands nor to Sweden. The dispute over East Carelia and Petchenga led to a conference with the Soviet government April 13th but negotiations were broken off April 25th, neither government being disposed to compromise, and meanwhile a provisional government was set up in East Carelia which demanded that the Soviet force be withdrawn and that the region be placed under the protection of Finland.

FIRE INSURANCE. See **INSURANCE.**

FIRE PROTECTION. Once again in 1920 the United States paid its annual toll in destruction by fire which at a period of recognized deficiency in building and shortage of housing and other accommodations represented even more than the mere destruction of property. It being a period of readjustment in which municipalities and other local organizations were unable to undergo or incur capital indebtedness to any unusual degree, it followed that comparatively little could be done in extending fire department strength and equipment save where it was absolutely necessary. On the technical side there were few important developments during the year. On the other hand there were few serious fires and no important conflagrations.

This however emphasized how generally the large fire loss of the country was borne, and how necessary it was for every community and every industry to exert itself to the utmost to conserve property at a time when increased production was the order of the day.

IMPORTANT FIRES. The accompanying table from the *Journal of Commerce* indicates the more important fires of 1920, that is those where the losses amounted to \$1,000,000 or over. The year was free from any large or general conflagrations but as seen below there were a number of serious and costly individual fires. The largest of these were the destruction of the wharf and piers at New Orleans and the great leather fire at Wilmington, Del. Thirty-eight fires during the year of 1920, each of which resulted in an estimated property loss of \$1,000,000 or more are listed below:

Location—Description	Amount
Sheboygan, Wis., tannery	\$2,150,000
New York City, shipyard, buildings, etc.	1,000,000
Old Point Comfort, Va., hotel	1,000,000
Dayton, Ohio, tobacco warehouse	1,100,000
Grand View, Texas, business and residential section	2,000,000
New York City, storage warehouse	1,000,000
Dallas, Texas, aviation repair depot	1,000,000
Little Rock, Ark., railroad station, etc.	1,000,000
Brooklyn, N. Y., steamers, lighters, and iron works	1,500,000
San Francisco, Cal., glass works	1,000,000
Ottawa, Ont., lumber yards	1,000,000
Galveston, Texas, sisal warehouse	1,500,000
Greeley, Kan., pumping station	1,000,000
Baltimore, Md., business buildings	1,000,000
Chicago, Ill., freight warehouse and cars	1,500,000
Manistee, Mich., lumber and salt plant	1,000,000
Kansas City, Mo., motion picture exchange ..	1,000,000
New Orleans, La., sisal and other warehouses	1,200,000
Bradford, Ohio, three business blocks	1,000,000
Mt. Carmel, Pa., colliery	1,000,000
Lawrence, Ky., four distillery warehouses ...	1,130,000
Perth Amboy, N. J., asphalt plant	2,250,000
Sacramento, Cal., canned goods warehouse ..	1,500,000
Galveston, Texas, piers, cotton and other merchandise	1,250,000
Kingsville, Texas, railroad shops and other merchandise	1,250,000
St. Louis, Mo., car plant and lumber	1,122,000
Cameron, Texas, cotton compress and railroad property	1,000,000
Washington, D. C., naval air station	1,000,000
Paris, Ill., tire factory	1,000,000
Brownsville, Pa., coal mine	1,000,000
New Orleans, La., wharf warehouses and freight cars	2,500,000
Warsaw, N. C., lumber plant	1,000,000
Houston, Texas, railroad shops, etc.	1,000,000
Madison, Ill., rolling mill and dwellings ...	1,000,000
New Orleans, La., Dry dock and four steamers	2,200,000
Venice, Cal., amusement pier	1,000,000
Mullens, W. Va., business block	1,000,000
Wilmington, Del., leather plant	2,500,000

The losses for the year 1920 month by month as compared with the monthly record of the two preceding years are given herewith.

	1918	1919	1920
January	\$37,575,100	\$29,446,325	\$37,912,750
February	20,688,155	26,891,950	26,631,500
March	20,213,980	22,201,900	27,597,700
April	20,108,900	15,484,750	22,108,750
May	20,545,900	16,516,300	25,440,300
June	24,890,600	20,475,750	25,743,900
July	24,537,000	20,198,600	25,135,825
August	31,476,650	24,526,000	17,930,800
September	13,434,300	29,083,500	25,630,050
October	75,412,300	13,358,400	28,331,100
November	12,333,750	23,450,800	28,093,350
December	15,737,750	27,366,500	41,197,600
Year	\$316,954,385	\$269,000,775	\$330,853,925

There was a decrease in the total number of outbreaks of fire in 1920 which in each instance resulted in estimated property damage of \$10,000

or over, the total being 3457, as compared with 3904 such fires in 1919. However there was to be noted a steady increase in the amount of damage done by individual outbreaks once a fire had gotten headway, as will be noticed from the comparative table of fires classified according to their destructiveness. This seemed to indicate certain deficiencies in organized fire protection.

Estimated loss	1916	1917	1918	1919	1920
\$10,000 to \$20,000	1,041	1,031	906	855	993
20,000 to 30,000	551	581	527	516	557
30,000 to 50,000	371	427	387	411	410
50,000 to 75,000	851	856	325	326	442
75,000 to 100,000	124	164	171	171	215
100,000 to 200,000	311	340	359	357	478
200,000 and over	208	251	268	268	362
Total	2,857	3,150	2,943	2,904	3,457

AMERICAN FIRE LOSSES IN 1920. The total fire losses in the United States and Canada in 1920 reached a figure only exceeded in 1906, the year of the San Francisco conflagration, when the figure was \$459,000,000. In 1920 according to the carefully kept records of the *Journal of Commerce and Commercial Bulletin* (New York) there was a destruction of property amounting to \$330,853,925. This was over sixty millions in excess of the fire losses of 1919 and \$13,800,000 greater than the record of 1918, which included a number of very heavy losses in munition and other war work plants.

The figures given above for 1920 represented the record of property destroyed in the United States and Canada (discussed in more detail below), and their compilers naturally call attention to the fact that in considering them with other years it must be borne in mind that the value therein described carried in it a considerable of the inflation which had prevailed in 1919 and 1920. During the first three months of 1920 the losses were heavy as a result of the severe winter practically throughout the entire country while towards the end of the year the greatest monthly loss was scored in December at a time when it might have been supposed that values had been reduced an appreciable amount in the process of deflation which had been going on for several months.

The fire losses of the United States, according to the reports, were fairly well distributed as to territory, though for two or three months the Pacific Coast section was a very pronounced contributor, on account of the protracted dry weather in that section.

There were also an unusually large number of heavy fire losses in the Southwest, particularly along the New Orleans waterfront and in Texas, especially of docks and warehouses. This was regarded as discouraging in view of increased attention to fire prevention and private and public protection, and insurance men point significantly to the fact that with decreased or stagnant business there was usually an increase in the fire losses. This so called "moral hazard" was alleged as an important factor in the great fire waste of the United States.

The fire losses of 1920 brought the total fire waste of the United States and Canada for the 42 years from 1879 through 1920 up to the enormous figures of \$7,362,820,745, or an average of \$175,305,256 per year. This average cannot be used as a guide on current annual fire losses because the values in later years and the amount of property exposed to fire hazard were so much greater than they were in the earlier years. The losses of the 10 years 1910-20 amount to \$2,518,399,270, which would show a fire loss average of

\$250,000,000 per annum, and taken on this basis the 1920 record was \$80,000,000 in excess of the normal. The following table also from the *Journal of Commerce*, gives the record of fire losses in the United States and Canada for each year since 1879:

1920	\$330,853,925	1899	\$136,773,200
1919	269,000,775	1898	119,650,500
1918	317,014,385	1897	110,819,650
1917	267,273,140	1896	115,656,500
1916	231,442,905	1895	129,835,700
1915	182,836,200	1894	128,246,400
1914	235,591,350	1893	156,415,875
1913	224,728,350	1892	151,516,000
1912	225,320,900	1891	143,764,000
1911	234,837,250	1890	108,893,700
1910	234,470,650	1889	123,046,800
1909	203,649,200	1888	110,885,600
1908	238,562,250	1887	120,283,000
1907	215,671,250	1886	104,924,700
1906	459,710,000	1885	102,818,700
1905	175,193,800	1884	110,108,600
1904	252,554,050	1883	110,149,000
1903	156,195,700	1882	84,505,000
1902	149,260,850	1881	81,280,000
1901	164,517,450	1880	74,643,400
1900	163,362,250	1879	77,703,700

Total for 42 years \$7,362,820,745

CANADA'S FIRE LOSSES. Segregating the loss in fire in Canada from the combined statistics given above, the total for 1920 as estimated by the *Monetary Times*, was \$27,371,574, which was \$4,000,000 higher than in 1919, and exceeded only by 1918, when it reached \$31,815,844.

The 1918-20 record shows monthly losses:

Month	1918	1919	1920
January	\$2,688,556	\$3,915,290	\$2,687,850
February	2,243,762	1,091,834	1,895,575
March	1,632,286	2,154,095	1,793,200
April	3,240,187	1,080,070	3,229,500
May	8,570,014	1,785,190	2,001,819
June	3,080,982	3,337,530	1,424,319
July	3,369,684	1,118,377	1,426,850
August	3,110,445	1,374,495	1,857,800
September	917,286	1,940,272	2,480,485
October	5,119,145	1,023,288	2,467,901
November	1,059,580	2,339,870	2,769,800
December	1,788,917	2,047,496	3,886,475

Totals \$31,815,844 \$23,207,647 \$27,371,574

The per capita loss in Canada is greater than that in the United States.

GREAT BRITAIN'S FIRE LOSSES. The fire losses in Great Britain for the year 1920, together with the figures for 1919 and 1918, are given below:

	1920	1919	1918
January	\$303,000	\$1,146,700	\$412,500
February	694,000	485,400	297,700
March	506,500	421,100	338,400
April	479,500	176,950	344,100
May	1,120,000	508,700	312,000
June	806,000	4,576,200	467,500
July	619,000	576,800	498,000
August	561,000	366,700	404,000

STATISTICS OF FIRES IN AMERICAN CITIES, 1919

(From Report of the Committee on Statistics and Origin of Fires, National Board of Fire Underwriters,

May 27, 1920.)		Confined to building or place of origin		Total loss	Number of fires per 1000 population	Loss per capita
Area	No. of alarms	Number of fires	of origin			
Sq. miles	Population					
New York	314.75	6,006,794	15,152	13,429	\$12,488,258	2.23
Chicago	199.37	2,815,000	20,678	17,208	7,331,023	6.11
Philadelphia	129.75	1,850,000	5,076	4,204	4,885,485	2.27
St. Louis	61.37	900,000	4,725	4,088	1,616,254	4.54
Detroit	79.62	900,000	4,808	4,190	4,026,279	4.66
Boston	47.81	808,310	5,433	4,934	2,577,584	6.10
Cleveland	60.	750,000	.....	3,906	1,793,044	5.21
Baltimore	98.33	750,000	3,265	3,244	3,205,602	4.33
Los Angeles	385.	700,000	3,390	3,100	1,388,205	4.57
Buffalo	42.	500,000	1,772	1,473	969,730	2.95
San Francisco	38.87	525,000	3,755	3,351	.....	6.38
Cincinnati	72.	418,022	1,574	1,468	612,742	3.51
Newark, N. J.	23.5	450,000	1,926	1,545	896,881	3.43
New Orleans	196.25	380,000	1,126	882	548,248	2.32
Washington, D. C.	70.	400,000	1,913	1,562	588,171	3.90
Milwaukee	25.85	510,000	2,889	2,228	917,386	4.37
Seattle	57.92	380,000	2,673	2,358	762,757	6.21

* Fiscal year ending June 30, 1919.

September	940,000	445,000	708,000
October	1,155,000	498,000	363,000
November	500,000	378,000	650,000
December	805,000	440,000	384,000

Total 12 months. \$28,480,000 \$10,017,550 \$5,174,200

From the above table it will appear that the estimated total loss for 1920 was slightly more than \$1,500,000 under that of 1919, which latter total was considerably enlarged by the abnormally heavy losses in the month of June.

STATISTICS OF FIRES. The Committee on Statistics and Origin of Fires of the National Board of Fire Underwriters presented its annual report on May 27, 1920. From this report there have been abstracted as usual statistics of fires in the larger American cities for the year 1919. In 1919, 31 American cities had a per capita loss in excess of \$5, Cedar Rapids, Iowa, reaching the extraordinary figure of \$50.41. Fresno, Cal., which had been on a list of cities with a per capita fire loss of \$5 or over for four out of the five previous years, again figured with a loss of \$15.64 in 1919. The Committee stated in referring to the annual figures of fire losses prepared by the *Journal of Commerce*, which as usual it includes in its report, and which for 1919 show a loss for the United States of \$249,179,275, or \$2.33 per capita as compared with \$2.76 in the preceding year, "We believe these estimates are entirely too low, and that it is more accurate to use the reports filed with the Actuarial Bureau, adding 25 per cent to cover losses paid by companies not members of the Bureau and property destroyed which was uninsured. On that basis, we would show for 1918 a property loss of \$350,000,000 or \$3.23 per capita, and for 1919 \$325,000,000, or \$3.13 per capita."

U. S. CITIES IN WHICH LOSS EXCEEDED \$5.00 PER CAPITA, 1919

(Report of the Committee on Statistics and Origin of Fires, National Board of Fire Underwriters, May 27, 1920.)

*Cedar Rapids, Ia.	\$50.41	Mansfield, O.	\$7.08
Rock Island, Ill.	27.49	Toledo, O.	6.82
†Norfolk, Va.	27.23	†Houston, Tex.	6.73
Mobile, Ala.	17.93	Kearny, N. J.	6.68
†Fresno, Cal.	15.64	Waterloov, N. Y.	6.44
†Little Rock, Ark.	14.89	Huntington, W. Va.	6.42
East Chicago, Ind.	14.30	*Hoboken, N. J.	6.35
*Stamford, Conn.	13.09	Lakewood, O.	6.14
Petersburg, Va.	13.08	†Augusta, Ga.	6.12
Great Falls, Mont.	13.00	Butte, Mont.	5.56
Chelsea, Mass.	9.59	*Tulsa, Okla.	5.55
*Somerville, Mass.	8.58	Moline, Ill.	5.45
*Ottumwa, Ia.	8.43	Grand Rapids, Mich.	5.22
†Dubuque, Ia.	8.37	Sacramento, Cal.	5.10
Tampa, Fla.	7.83	Fort Smith, Ark.	5.09
Danville, Va.	7.29		

*Cities in this class for two of five years ended 1919.

† In this class three of the five years.

‡ In this class four of the five years.

COMPARATIVE FIRE LOSSES, UNITED STATES
(From Report of the Committee on Statistics and Origin of Fires, May 27, 1920, National Board of Fire Underwriters.)

	Population	Total loss	Per capita
1915—Whole country	100,899,318	*172,033,200	1.71
333 cities...	35,161,266	†68,386,218	1.94
1916—Whole country	102,017,312	*214,530,995	2.10
329 cities...	36,055,568	†79,440,658	2.20
1917—Whole country	103,635,606	*250,753,640	2.42
327 cities...	36,557,011	†89,483,398	2.45
1918—Whole country	105,253,300	*290,959,885	2.76
328 cities...	38,079,781	†95,865,412	2.50
1919—Whole country	106,871,294	*249,179,275	2.33
326 cities...	39,898,869	†103,028,235	2.58

* Estimated. † Actual figures reported.

FOREST PROTECTION. It was of special significance that in 1920 as in 1919 there was no loss of timber or equipment in the territory comprising several million acres protected by 66 wardens maintained by the Western Forestry and Conservation Association. Furthermore the forest-fire loss in the Northwest was less in 1920 than in 1919. Washington had 754 fires in 1920 against 847 in 1919 and lost less than 42,000,000 feet of timber, compared to 60,000,000 feet in the previous year. Of the 754 fires 120 were due to campers, 74 to lightning, 60 to cigarettes. There was an unusual proportion of lightning fires in Oregon in 1920 but less loss resulted than in 1919. The same was true of Montana and of other Western States. An interesting event was the maintenance of an aerial forestry patrol on the Western Coast (see AERONAUTICS). This resulted in the prompt reporting of fire outbreaks to the forest wardens and setting on foot prompt remedial methods.

INCENDIARISM IN THE UNITED STATES. The Actuarial Bureau of the National Board of Fire Underwriters in 1920 compiled statistics on incendiary fires for the period 1916-19. These interesting data revealed that there had been a material decrease of the criminal fires each year since 1916, when the record was commenced. In 1916 there were 7493 criminal fires, causing aggregate loss of \$8,121,816. In 1917 this was reduced to 1942 such fires, causing losses which totaled \$2,703,106. The number of incendiary fires again decreased in 1918, but the value of property destroyed was somewhat larger, the figures being 973 fires and losses \$2,985,541. In 1919 the number of criminal fires dropped to 908 and the property loss to a total of \$1,504,689. This was a decrease of 88 per cent in the number of fires and 81.4 per cent in the amount of incendiary losses during the past four years. Discussing these results, the National Board's organ, *Safeguarding America Against Fires*, stated:

"These statistics show a striking decline in such losses since 1916 and may be considered as a barometer of general business conditions. The indications are, however, that the 1920 figures will display a startling upturn in the incendiary chart. New York showed the greatest decrease in the number of incendiary fires, the total of 713 in 1916 comparing with 75 in 1919, while Illinois had 491 criminal fires in 1916, as against 86 last year. In Pennsylvania the comparison was 389 to 32. The losses tell their own story."

State	1919		1918		1917		1916	
	No. claims	Amount	No. claims	Amount	No. claims	Amount	No. claims	Amount
Alabama	9	\$10,637	13	\$10,559	73	\$65,250	211	\$216,414
Arkansas	16	7,889	11	788	34	18,506	183	22,689
Arizona	6	26,961	2	60,796	5	74,396	14	216,777
California	36	53,033	48	861,923	119	354,148	397	436,846
Colorado	13	15,324	12	26,318	16	62,501	75	39,651
Connecticut	20	31,675	20	30,621	35	41,216	84	82,706
Delaware	3	2,326	2	1,096	..	..	4	5,321
District of Columbia	2	2,405	0	..	1	175	13	5,426
Florida	16	52,654	19	29,113	43	55,882	154	187,880
Georgia	32	59,835	7	16,576	54	90,866	241	356,795
Idaho	15	18,547	4	91,381	8	5,658	21	19,313
Illinois	86	115,459	38	26,312	157	103,322	491	467,580
Indiana	20	43,468	30	44,040	92	156,352	246	307,580
Iowa	10	5,108	28	29,626	28	35,462	138	93,749
Kansas	32	34,359	30	17,417	41	25,720	205	116,346
Kentucky	22	21,695	12	47,546	24	13,141	125	126,699
Louisiana	11	29,020	23	75,548	55	38,217	175	198,181
Maine	12	13,289	7	10,371	19	22,522	72	62,856
Maryland	10	4,095	8	15,200	15	8,594	65	40,360
Massachusetts	88	136,977	55	62,477	139	119,603	342	439,437
Michigan	36	44,534	80	397,326	81	99,289	242	317,444
Minnesota	10	4,877	13	57,929	37	46,199	167	207,973
Mississippi	9	23,421	13	34,447	42	32,397	155	230,299
Missouri	33	38,768	25	48,084	86	95,555	356	250,183
Montana	14	7,167	9	59,187	8	14,662	34	58,755
Nebraska	6	4,553	18	10,029	15	6,339	106	105,205
Nevada	5	2,154	1	750	..	..	14	42,110
New Hampshire	11	8,227	8	3,683	13	12,866	54	38,449
New Jersey	27	41,584	17	44,921	67	61,646	176	176,002
New Mexico	4	2,217	5	82,997	2	52	13	11,162
New York	75	95,322	95	103,082	180	251,388	713	650,730
North Carolina	14	55,564	4	4,132	6	24,963	62	108,291
North Dakota	5	40,816	13	11,274	12	2,448	20	44,501
Ohio	34	36,688	60	154,736	87	192,920	354	334,086
Oklahoma	16	16,946	36	58,185	66	70,890	235	290,204
Oregon	9	10,905	18	21,959	10	6,501	72	51,202
Pennsylvania	32	42,300	69	127,356	99	280,702	389	438,005
Rhode Island	2	446	11	28,529	6	5,976	44	43,921
South Carolina	6	117,313	3	1,408	5	1,448	88	92,505
South Dakota	..	..	5	2,160	13	15,759	11	8,170
Tennessee	10	22,094	25	110,637	39	21,594	213	202,154
Texas	19	68,737	40	141,648	58	79,747	267	391,634
Utah	20	19,190	2	1,705	3	337	23	17,406
Vermont	6	4,029	..	..	5	6,466	15	5,161
Virginia	15	14,384	6	4,031	7	4,675	151	176,666
Washington	20	70,108	18	23,899	20	20,565	117	128,065
West Virginia	5	8,878	6	2,800	5	3,010	59	190,253
Wisconsin	8	15,480	8	23,675	10	51,638	78	61,815
Wyoming	3	3,851	1	22,284	2	1,545	9	6,859
Total	908	\$1,504,689	978	\$2,985,541	1,942	\$2,703,106	7,403	\$8,121,816

Figures compiled from an analysis of some 3,500,000 adjustment reports by the Actuarial Bureau of the National Board of Fire Underwriters indicated that property valued at over \$1,416,375,000 was destroyed by fire in the United States during the five years from 1915 to 1919, inclusive. This amount was the equivalent of 283,275 new houses at \$5000 each, or housing accommodation sufficient to shelter the entire population of the State of Connecticut.

In an analysis of the causes of these fires electricity was found to be the chief cause of fire loss, with a total for the five years of \$84,086,471. Matches and smoking stood second with \$73,474,348, while defective chimneys and flues held third place with a total of \$56,650,915.

New York suffered the greatest damage, the five-year record total being \$140,305,821, or nearly 10 per cent of the whole. Pennsylvania was second with \$78,339,666, Illinois third with \$73,916,503, New Jersey fourth with \$63,679,525, and Massachusetts fifth with \$53,677,087.

The accompanying table of fire losses by causes was compiled from the summary of the National Board.

STRICTLY PREVENTABLE CAUSES		
	Five years, 1915-1919	Yearly average
Defective chimneys and flues	\$56,650,915	\$11,330,183
Fireworks, firecrackers, etc.	1,499,854	299,970
Gas, natural and artificial	10,280,380	2,040,666
Hot ashes and coals, open fires	11,806,754	2,361,350
Ignition of hot greases, oil, tar, wax, asphalt, etc.	4,490,269	898,053
Matches—smoking	73,474,348	14,694,869
Open lights	18,956,032	3,791,206
Petroleum and its products	25,910,434	5,182,086
Rubbish and litter	8,511,824	1,702,364
Sparks on roofs	29,271,585	5,854,317
Steam and hot water pipes	1,851,484	370,286
Stoves, furnaces, boilers, and their pipes	55,138,181	11,026,836
Total strictly preventable	\$287,786,960	\$57,551,986
PARTLY PREVENTABLE CAUSES		
Electricity	\$84,086,471	\$16,817,294
Explosions	10,162,149	2,032,429
Exposure, including conflagrations	202,176,433	40,435,286
Sparks from machinery	31,862,424	6,372,484
Incendiarism	21,596,965	4,319,393
Lighting	39,828,489	7,965,697
Miscellaneous known causes	20,193,164	4,038,632
Sparks from combustion	25,144,191	5,028,838
Spontaneous combustion	49,702,886	9,940,577
Total partly preventable	\$484,926,172	\$96,950,641
Unknown causes, probably largely preventable ..	\$360,587,544	\$72,117,508

Total for United States, \$1,133,100,676 \$226,620,135
The National Board in this compilation urges that the public must bear in mind that 25 per cent should be added to these figures to cover losses not reported to the Actuarial Bureau; this would make an estimated total of \$1,416,375,845, and a yearly average of \$283,275,169.

FISHER, GEORGE EGBERT. Mathematician, died. March 28. He was born at Westerlo, N. Y., April 20, 1863. At the time of his death he was professor of mathematics in the University of Pennsylvania. He graduated at Cornell University in 1887 and became instructor of mathematics there in the same year. He was made assistant-professor in 1889 and was professor of mathematics after 1908 in the University of Pennsylvania. He was a member of the important learned bodies within his field of study and the author of various manuals and other texts on the subject of algebra. He was known among his colleagues and students for his thorough scholarship.

FISHER, JOHN ARBUTHNOT, LORD. British admiral, died in London, July 10. At the time of his death he was Admiral of the Fleet. He was born at Rambodde in Ceylon, Jan. 25, 1841, the son of a captain in the British army, entered the navy in 1854, and served in the Baltic Fleet during the war with Russia. He later served in China and in 1863 became gunnery lieutenant in the first sea-going ironclad, *The Warrior*. He wrote a treatise on the torpedo in 1874 and was promoted captain in that year. He was in command of the *Inflexible*, at that time the largest and most heavily armed vessel in the navy. When Alexandria was bombarded in 1882, and during the Egyptian operations, he fitted out and commanded an armored train which operated against Arabi's troops. In 1884 along with Mr. W. T. Stead he published *The Truth About the Navy*, which led at once to an adequate naval appropriation and prepared the way for the Naval Defense Act of 1889, thus laying the foundation of the naval power which enabled England to end the Great War. He was director of naval ordnance and torpedoes, 1886-91; admiral-superintendent of the Portsmouth dockyard, 1891-92; Controller of the Navy with a seat in the Board of Admiralty, 1892-97.

During the Spanish War while in command of the *Renown* he fired the salute in honor of the American fleet under Admiral Sampson which was then in Bermuda waters. He worked to bring about the successful understanding between England and France, and organized the naval visits to Brest and Portsmouth in 1905. He was naval delegate at the first Peace Conference at the Hague where he won a national reputation by the vigorous expression of his views. From 1899 to 1902 he was in command of the Mediterranean fleet, after which he became second Sea Lord. In this capacity he introduced and applied a thorough plan for the training of junior officers for the fleet.

On Oct. 21, 1904, he was appointed first Sea Lord of the Admiralty which post he held for five years. This was one of the most important periods in the history of the office on account of the reforms that he introduced. Chief among these may be mentioned: the nucleus crew system which rendered the whole fleet instantly ready for war in times of peace; other features were the elimination of vessels which were of no use for fighting and the introduction of the dreadnought type of warship. He received the Order of Merit in 1905 and this was followed by other honors from the home and foreign governments. He spoke seldom in the House of Lords, but replied to an attack upon him by Mr. Churchill in 1915 in which he was accused of weakness in the question of the Dardanelles.

In the autumn of 1914 he was recalled to the office of First Sea Lord and during the war rendered remarkable service. He was active in the preparation of the fleet and of the necessary equipment and he developed a strategic plan involving the invasion of the Baltic and the landing of an army within striking distance of Berlin, but this plan was ruined by the Dardanelles venture, his protests being without avail. In September, 1919, he published a letter on behalf of national economy and followed it with a series of articles in the press in the course of which he urged the government to turn out the people who were responsible for the ruinous waste of money. He published a volume of

Reminiscences in 1919. He was buried in Westminster Abbey.

FISHERIES. See ALASKA.

FISHERIES IN THE UNITED STATES.

The conditions of the fisheries in 1920 was unsettled owing to the instability of prices. While the prices of foodstuffs generally were rising during the year, there was on the whole an under-consumption of fish and in the great New England fisheries there was even a falling off of prices as compared with the previous year. Increasing attention was given during the year to the commercial possibilities of the fisheries, to providing means of increased production, to effecting improvements in the preparation of the products, and to saving the by-products. Several investigations were made by the Bureau of Fisheries into the preservation of fish with salt, the canning of products, the preservation of nets, etc. An interesting development was the study of the possible use of aeroplanes in the fisheries. The Bureau of Fisheries made the following report on that subject: The most obvious purpose that aeroplanes may serve is in the offshore fisheries in determining the location of whales and schools of surface-swimming fishes, like mackerel and menhaden, and in promptly communicating this information to fishing vessels or to shore stations. Other uses of aircraft in connection with the fishing industry will doubtless arise. In April, 1920, it was suggested to menhaden companies operating in the Chesapeake Bay region and having vessels that frequent the grounds off the Virginia capes that seaplanes might be used advantageously in helping the fishermen find fish. Desirous of determining the practicability of the commercial use of aeroplanes in the fisheries, the Bureau was instrumental in bringing about an arrangement between the Naval Aviation Service and the menhaden fishermen whereby naval seaplanes were made available for observation flights in quest of menhaden. Subsequently radio apparatus was installed on two menhaden vessels and at a factory on Chesapeake Bay, so as to be able to communicate with the seaplanes; the offshore fishing grounds were blocked off in numbered squares on charts; and two naval seaplanes, each with a fisherman-observer, traversed the fishing areas and reported the location of schools of fish. The early results were satisfactory, as the seaplanes readily found fish and acquainted the fishermen with their location and abundance, thus saving much time and expense that would ordinarily be required for cruising. If this experiment continues to meet with the initial success, there is reason to believe that aeroplanes may take a permanent place in the menhaden fishery and doubtless in other branches. Inasmuch as the investment in planes and radio apparatus and the salaries of observers, pilots, and radio operators might be too burdensome for a single company to assume, it may be to the advantage of the industry for communities or groups of interests to provide for such service in common.

The New England vessel fisheries comprised during the calendar year of 1919, a fleet numbering 523 sail, steam, and gasoline screw vessels. The amount in value of the catch landed at the three principal ports are as follows: Boston, Mass., 103,391,370 lbs., valued at \$4,713,350; Gloucester, Mass., 71,370,957 lbs., valued at \$2,145,592; and Portland, Me., 21,718,943 lbs., valued at \$689,441. These represented a decrease of 4.38 per cent in quantity and 28.32 per

cent in value as compared with the previous year.

The Seattle, Wash., fishing fleet landed in 1919, 13,651,020 lbs., valued at \$530,284, a decrease of 20.13 per cent in quantity and 18.93 per cent in value as compared with the preceding year. The fishery products taken in Puget Sound and tributary waters amounted to 11,809,450 lbs., valued at \$983,819, almost all being salmon—an increase over the preceding year of 11.35 per cent in quantity and 7.8 per cent in value.

In the Great Lakes fisheries, 9221 persons were engaged in 1919. The total product was 103,759,223 lbs., valued at \$6,297,969.

For the fisheries of the Gulf States the latest figures published in 1920 were those for 1918. In that year 14,888 persons were engaged in the fisheries, and the product amounted to 130,923,583 lbs., valued at \$6,510,310, more than one-half of the total value and nearly one-half of the total quantity coming from Florida.

The Hudson River shad fisheries and the shad and alewife fisheries at the Potomac River in 1919 were reported as follows: Hudson River: 374,974 lbs., valued at \$83,724; Potomac River: shad, 2,040,473 lbs., valued at \$332,397 and alewife 3,676,921 lbs., valued at \$61,016. The following table shows the distribution of fish and fish eggs in the fiscal year 1920:

SUMMARY, BY SPECIES, OF THE DISTRIBUTION OF FISH AND FISH EGGS DURING THE FISCAL YEAR ENDED JUNE 30, 1920.

Species	Total
Catfish	76,286,060
Carp	44,799,310
Buffalofish	177,201,575
Shad	56,558,270
Alewife	115,000
Whitefish	390,365,000
Cisco	166,205,000
Silver salmon	8,727,750
Chinook salmon	50,038,270
Sockeye salmon	101,807,615
Humpback salmon	307,200
Chum salmon	13,051,250
Steelhead salmon	4,118,035
Atlantic salmon	1,550,225
Landlocked salmon	1,641,905
Rainbow trout	6,871,815
Blackspotted trout	4,059,800
Loch Leven trout	101,985
Lake trout	32,900,785
Brook trout	10,015,955
Grayling	1,165,000
Pike and pickerel	510,350
Freshwater drum	29,955
Crappie	35,897,805
Largemouth black bass	1,564,965
Smallmouth black bass	212,375
Rock bass	61,035
Warmouth bass	14,650
Sunfish	30,879,120
Pike perch	244,525,000
Yellow perch	163,206,150
White perch	1,500
White bass	46,070
Striped bass	16,474,000
Cod	650,167,000
Pollock	557,685,000
Haddock	315,288,000
Flounder	1,603,080,000
Miscellaneous	2,824,950
Total	4,770,355,720

FISK UNIVERSITY. A co-educational institution for negroes at Nashville, Tenn., founded in 1866. In the first summer session of 1920 there were 55 students enrolled and in the regular fall session there were 562. There were 42 members on the teaching staff. The library con-

tained 12,000 volumes. Five hundred thousand dollars was offered by the General Education Board, conditioned upon raising \$2,000,000, half of which was to go into endowment. President, Fayette Avery McKenzie, Ph.D., LL.D.

FITZMAURICE, E. See ROMAN CATHOLICS.
FITZPATRICK, SIR DENNIS. British civil servant, died in London, May 20. He was born in 1837, educated at Trinity College, Dublin, and entered the Indian Civil Service in 1858. He distinguished himself as a magistrate in Delhi and was then appointed to prepare the government's case in a famous suit brought by the heirs of an Indian prince in connection with the confiscation of estates after the Mutiny. He was secretary of the Home Department in 1885 and was chief commissioner to Assam in 1887. Later as president of Hyderabad he showed remarkable skill in a famous diamond case. In 1897 he became a member of the Council of India in England from which office he retired in 1907.

FLAX. The flaxseed production in many of the world's principal flax producing countries in 1920 showed a marked recovery from the depression incident to the war. Provisional data published by the International Institute of Agriculture, Rome, show that a group of countries representing about 45 per cent of the world's production reported an increase of 30.5 per cent in acreage and 61.8 per cent in yield over the preceding year. In British India the 1920 production reached 17,320,000 bushels which was 84.3 per cent above the crop of 1919 and 94 per cent of the five year average. The 1919-20 crop of Argentina was heavy, amounting to 30,775,000 bushels and furnishing from 30,000,000 to 40,000,000 bushels for export. The area of the 1920-21 crop was reported at 3,484,000 acres, or 38,000 acres less than was grown the preceding year. The Canadian yield of 1920 was placed at 10,756,000 bushels or nearly double that of 1919.

In the United States, as estimated by the Department of Agriculture, the production reached 10,990,000 bushels as against 7,661,000 bushels in 1919. The area devoted to the crop was given as 1,785,000 acres or 213,000 acres above that of the year before. The average farm value of flaxseed Dec. 1, 1920, was \$1.766, while the corresponding price the year before was \$4.383 per bushel. On this basis the total value of the crop declined from \$33,581,000 in 1919 to \$19,413,000 in 1920. The acreage of flax for fibre was reported at 6000 acres or 20 per cent greater than the preceding year. The principal flax fibre regions this year were located in Wisconsin, Eastern Michigan, the Willamette Valley of Oregon, and Northern Minnesota.

FLOOD PROTECTION. Progress was made in earnest on a number of the great flood protection projects under way in the United States, and what was to be expected, though none the less gratifying, under flood conditions several recently completed or not altogether finished projects functioned most satisfactorily. While there was high water in the United States notably in the Mississippi, yet there were no serious floods with general loss of property and life. However plans went forward to secure future protection and some of the more important projects are noted below.

MISSISSIPPI RIVER. The spring flood in the Mississippi River in 1920 was in many respects notable but fortunately it was not attended by general destruction and loss of life. Above St.

Louis the flood was the most severe at Dubuque, Iowa, since 1888 and at Davenport since 1892. It originated in the melting of snow in Minnesota and Wisconsin during the last half of March, and this flood had not passed below La Crosse, Wis., when it was greatly increased in flow by a rainstorm passing over the watershed. The flood was most severe in the stretch of the river between Illinois and Iowa. Levees on both sides of the river near Muscatine, Iowa, gave way and about 85,000 acres of rich agricultural lands were overflowed, with an estimated loss in prospective crops of \$3,500,000, but without loss of life.

An encouraging sign of the times in connection with flood protection work generally and especially on the Lower Mississippi was that here the spring flood of 1920, the second great flood in recent years, was confined between the levees, the only break, a small one, being on April 17th about 75 miles below New Orleans, which was soon repaired. The crest stages of the 1920 flood fell about two feet short of the 1916 flood but the duration of the high water was considerably longer and there was made a new record for that portion of the river between Greenville, Miss., and the Passes. According to the analysis of this flood by A. S. Henry of the United States Weather Bureau (*Engineering News-Record*, vol. 85, p. 71, July 8, 1920) its magnitude and duration were in some measure due to the weather conditions six months earlier. "The heavy rains in October and November, 1919, caused a rapid rise in the streams of the lower Mississippi drainage and this rise was further augmented by the rains of December of that year. As a result the mean stage of the Mississippi at Memphis for December, 1919, exceeded the previous mean high water record by 8.1 feet; at Vicksburg the river on Dec. 31, 1919, stood within 2 feet of the flood stage, and although it fell after that date the fall was arrested before a stage of 25 feet was reached.

"Beginning on Jan. 13, 1920, a series of three separate flood flows mainly from the Ohio passed down the river the second of which crested at Vicksburg on April 20 at a stage of 50.8 feet, 3.1 feet short of the highest stage of record. The river was continuously above flood stage at Vicksburg from April 4 to June 13, or 71 days. At New Orleans the river was continuously above flood stage from April 15 to June 22, or 69 days, and the crest stage fell short of the previous high water by only 1.6 feet."

To deal with such flood protection work in the form of levee construction progressed actively and during the fiscal year ended June 30, 1920, a total of 12,537,564 cubic yards of material were placed in the levees below Rock Island, on the Mississippi River. That amount brought the total amount of material in those levees, placed under the direction of the Corps of Engineers, U. S. Army, to 361,691,350 cubic yards. On June 30 the work contemplated under the standard fixed by the Corps of Engineers, was 76 per cent complete. These levees protect 27,116 square miles of land.

It was the opinion expressed by the army engineers that considerable additional levee work must be provided for in the near future. Development in the State of Louisiana had reached a point where the Atchafalaya River either must be supplied with levees from the Mississippi to the Gulf, a large undertaking, or be divorced from



PARTIALLY COMPLETED ENGLEWOOD DAM



COMPLETED GERMANTOWN DAM

CONSTRUCTION AT MIAMI CONSERVANCY DISTRICT, DAYTON, OHIO

200

the Mississippi River, in which case the whole levee line on the Mississippi, from the Atchafalaya to the Gulf, would have to be materially reinforced, and the increased amount of silt brought down and other developments would add to the engineering problem at the Passes, through which the Mississippi finds its way to the Gulf.

MIAMI CONSERVANCY DISTRICT. In 1920 work advanced actively on the vast flood protection work comprised in this project and the volume of work performed up to Sept. 1, 1920, is summarized in the accompanying table of progress by the Department of Engineering. The relocation of the railways referred to under FLOOD PROTECTION in the YEAR BOOK for 1919 had been practically completed. The local protection work at Middletown, with the exception of a flood gate and some concrete revetment, were also completed, while the rivers at Germantown, Englewood, Lockington, and Huffman had been diverted through the outlet works, and the dams had been built across the old river beds. Progress was made on the local protection work at Dayton and Hamilton. The Germantown dam was completed, and Lockington dam was being finished. These structures are referred to elsewhere in the YEAR BOOK under DAMS. The total expenditures to June 30, 1920, were \$24,035,823 of which \$14,783,408 were for engineering and construction.

**VOLUME OF WORK PERFORMED AS OF
SEPT. 1, 1920**

BY THE MIAMI CONSERVANCY DISTRICT

Flood-control works proper

Earth removed from cut-off trenches, outlet works, spillways, and structures	877,010 cu. yd.
Loose rock, hardpan and solid rock removed from cut-off trenches, outlet works, spillways, and structures	442,567 cu. yd.
Earth placed in dams	3,978,490 cu. yd.
Earth placed in levees	721,246 cu. yd.
Earth removed from river channels ..	1,467,327 cu. yd.
Earth moved in soil stripping and in dressing slopes with earth	181,276 cu. yd.
Earth moved in permanent road building	93,409 cu. yd.
Earth moved in sewer and drainage construction	25,242 cu. yd.
Concrete placed	144,734 cu. yd.
Clearing and grubbing	104 acres
Steel reinforcing and steel piling placed	1,446,245 lb.
Riprap placed	5,233 cu. yd.

Public-service relocations

Earth excavation	1,785,250 cu. yd.
Loose and solid rock excavation	713,207 cu. yd.
Concrete placed in structures	32,698 cu. yd.
Gravel placed on relocated roads	26,882 sq. yd.
Steel reinforcing placed	811,179 lb.
Track laid	47.98 mi.
Ballast placed	214,000 cu. yd.
Railway relocated	23.6 mi.

In connection with the Miami Valley project it must be borne in mind that increasing the flow capacity of the river channels was only second in importance to the providing of a detention basin system. The throttling effort of the five great dams would not have sufficed to have the flow at maximum flood within the channel capacity of the streams. The channel of the great Miami River previous to the improvement had a bank full capacity of 90,000 second-feet at Dayton and 100,000 second-feet at Hamilton, while a possible though extraordinary flood if unregulated might cause a maximum flow of 350,000 and 490,000 second-feet at the two cities. Such a flood was to be controlled by the detention basins but even these would leave a volume of 125,000 second-feet at Dayton and 200,000 second-feet at Hamilton, or more than the capacity of

the river between levees. Channel development was influenced as well as limited by local conditions such as existing bridges with their piers and abutments and various shore structures. At Dayton therefore it was decided to widen and deepen the channel and raise the levees; at Hamilton the existing bridges did not figure to such a degree as but two, one highway and one railway bridge, survived the 1893 flood. At Dayton and Hamilton the new channel work provided an increase of from 25 to 80 per cent over the 1913 capacities while at other points in the development considerably greater capacity was secured within the new levees.

INDIANAPOLIS FLOOD PROTECTION. Having in mind the serious flood of 1913 and to provide against future damage the Indianapolis board of public works May 26, 1920, directed the city engineering department to begin plans for the completion of the flood prevention work on the east side of White River between the New York Central railroad bridge, south of Washington Street, to Raymond Street. The cost of the work was estimated at about \$2,000,000. The project provided for the establishment of a channel line on the east side of the White River, making a channel of 650 feet in width, in conformity to the flood prevention work previously constructed on the west side of the river.

It was proposed to eliminate two bends in the river, one at the Belt Railroad and the other between Morris Street and Oliver Avenue, so that the river would have a straight sweep. The completion of this work of widening the channel at the latter point would relieve the territory to the north in case of a flood and would protect three important city bridges and was considered more important.

DALLAS, TEXAS. A plan to secure protection from flood at Dallas, Texas, adopted during the year involved straightening and deepening the Trinity River and the construction of levees along its banks. This construction of levees which will have a total length of 10 miles and will form a channel 2000 feet wide also will serve to reclaim about 4000 acres of land. The levees were to be about 35 feet high and 10 feet wide on top, with slopes of 1 on 3. The improvement also involved the construction of bridges and storm water outlets and the relocation of railway track. The Dallas Property Owners' Association had brought about the organization of a levee district and plans and land appraisals were made during the year.

KAW RIVER, KANSAS CITY, KAN. In 1919 the voters of Kansas City voted against authorizing a bond issue of \$1,500,000 to construct the flood protection works recommended by the Kaw Valley Drainage Board. During 1920, however, it was proposed to clear the channel and raise the levees from 2 to 5 feet, eliminating all extraordinary obstructions, a considerable part of which was wreckage brought down in previous floods. Such working costing about \$400,000, it was claimed would give a channel adequate to take care of such a flood as that of 1903. This would involve also the construction of a deflecting dike or jetty where the Kaw River empties into the Missouri, a system of concrete walls, levees, and revetments and protection for lowlands at West Bottoms and also protection for Argentine and Armourdale.

LOS ANGELES COUNTY FLOOD CONTROL. During the year there was completed a detention

dam to control the flood waters of the Arroyo Seco, a quick rising winter stream tributary to the Los Angeles River, in the City of Pasadena. The dam described under DAMS is built of masonry about 120 feet in height with a crest of 310 feet, and has an outlet near the bottom, a tunnel outlet through the mountain, and a regulator-spillway.

COLORADO RIVER FLOOD PROTECTION. The protection works on the lower Colorado River referred to in the YEAR BOOK for 1919 (see FLOOD PROTECTION) seemed to have answered the requirements and it was reported from the Imperial Valley, Cal., that the crest of the annual flood in the Colorado River was passed on June 9th without serious damage having been done. A few days earlier, a small break in the Ackerson levee washed out a few hundred feet of the levee that was being strengthened by dumping rock from a railway line on top of the levee. The rock was being added, it is said, because of a small break in the Ackerson levee in February, 1919. This levee supplied the first line of defense in the protection of the Imperial Valley from the Colorado River.

FLORIDA. POPULATION. According to the preliminary report of the census of 1920, there were 968,470 residents in the State, January 1, 1920, as compared with 752,619 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 54,006, an increase of 8.0 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	780,000	10,530,000	10,530,000
	1919	830,000	12,450,000	17,480,000
Oats	1920	60,000	1,020,000	612,000
	1919	54,000	1,028,000	1,231,000
Tobacco	1920	4,200	a 4,620,000	2,218,000
	1919	4,200	a 3,990,000	2,175,000
Hay	1920	135,000	b 162,000	3,008,000
	1919	131,000	b 161,000	3,778,000
Rice	1920	3,000	72,000	126,000
	1919	2,000	48,000	5,250,000
Potatoes	1920	25,000	2,625,000	3,830,000
	1919	24,000	1,824,000	5,180,000
Sweet Potatoes	1920	45,000	4,275,000	5,740,000
	1919	41,000	4,100,000	506,000
Cowpeas	1920	23,000	184,000	648,000
	1919	24,000	c 18,000	1,530,000
Cotton	1920	101,000	c 16,000	3,344,000
	1919	103,000	3,220,000	4,798,000
Peanuts	1920	115,000	3,402,000	7,178,000
	1919	126,000	d 8,500,000	18,700,000
Oranges	1920		d 7,000,000	17,500,000
	1919			

a Pounds. b Tons. c Bales. d Boxes.

FINANCE. State Treasurer reported, December 31, 1920: Balance on hand January 1, 1920, \$1,825,899.96; receipts during 1920, \$8,835,345.97; disbursements during 1920, \$8,390,294.96. Balance on hand December 31, 1920, \$2,270,950.98. Public debt consists solely of refunding bonds, \$601,567, at 3 per cent interest annually, all held by the Educational Funds of the State.

ELECTIONS. The vote in the presidential election of 1920 was as follows: Cox (Democrat), 90,515; Harding (Republican), 44,853; Debs (Socialist), 5189; Prohibitionist, 6266; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 55,948; Hughes (Republican), 14,594; Benson (Socialist), 7814; Prohibitionist, 4855. The vote for Senator in 1920 was as follows: Democrat, 98,957; Republican, 31,065; Socialist, 3525.

CHARITIES AND CORRECTIONS. Institute for Deaf, Dumb and Blind at St. Augustine; Hospital for Insane at Chattahoochee; Industrial School for Boys at Marianna; Reform School for Delinquent Girls at Ocala; Prison Farm at Raiford; Home for Feeble Minded and Epileptics at Gainesville.

OFFICERS. Elected 1920, to assume office January 4, 1921: Governor, Cary A. Hardee; Secretary of State, H. Clay Crawford; Comptroller, Ernest Amos; Treasurer, John C. Luning; Superintendent of Public Instruction, William N. Sheats; Attorney-General, Rivers H. Buford; Auditor, J. Will Yon; Railroad Commissioners, R. Hudson Burr, Newton A. Blitch, A. S. Wells; United States Senators, Duncan U. Fletcher and Park M. Trammell. Congressmen: First district: Herbert J. Drane; Second, Frank Clark; Third, John H. Smithwick; Fourth, William Joseph Sears.

JUDICIARY. Supreme Court: Chief Justice, Jefferson B. Browne; Associate Justices James B. Whitfield, Thomas F. West, William H. Ellis, R. Fenwick Taylor.

FLORIDA, UNIVERSITY OF. A State institution of the higher education at Gainesville, Fla., founded in 1905. In the summer session of 1920, which is co-educational, there were 744 students enrolled and in the regular fall session there were 683 students (excluding duplicates). The university consists of five separate and distinct colleges, namely, the College of Arts and Sciences, College of Agriculture, College of Engineering, College of Law, Teachers' College, and Normal School. There were 47 members in the faculty,

including three new instructors. The number of bound volumes in the library was 35,500. The income for the year amounted to \$112,000. President, Albert Alexander Murphree, LL.D.

FLORIO, CARYL (real name WILLIAM JAMES ROBJOHN). American musician, died in Morgantown, S. C., November 21. He was born in Tavistock, England, Nov. 3, 1843. He came to New York in 1867, and was the first boy solo soprano at Trinity Church. He held position in New York as organist and choirmaster, and also was conductor of opera in New York and Havana. For the last 20 years he lived in Asheville, N. C., as teacher and conductor of choral societies. His compositions include two operas, three operettas, ambitious orchestral works, and chamber-music.

FLUTATION PROCESS. See METALLURGY.

FLOUR. See AGRICULTURE.

FLOURNAY, T. See **PSYCHICAL RESEARCH. FOLKLORE.** See **ANTHROPOLOGY.**

FOOD. See articles on agricultural subjects and **FOOD AND NUTRITION.**

FOOD AND NUTRITION. Abnormal but somewhat improved conditions characterized the world's food situation during the year. The total food production at last showed appreciable gains, and the cost of food, after continuing to ascend for several months, apparently reached a maximum, and at the end of the year was slowly receding. The great food exporting countries of eastern Europe, however, were still inaccessible, and difficulties of transportation, credit, and international exchange impeded an equitable distribution of available supplies so that there continued to be wide extremes of famine and plenty in the world as a whole.

FOOD SITUATION IN THE UNITED STATES. Except for what proved to be a temporary scarcity of sugar for retail distribution, ample supplies of foodstuffs were available for domestic requirements and export. The year was also noteworthy for marked reductions in wholesale prices. This movement began in February, but was specially pronounced from September onwards. On Dec. 11, 1920, *Bradstreets'* reported as its weekly food index figure, based on wholesale prices of 31 food articles, \$3.66 as compared with \$5.18 for the corresponding week of the previous year. This represented the lowest level since the entrance of the United States into the war in 1917, but was still some 50 per cent above the price levels of 1914. Wheat flour had declined from \$14 per barrel to \$11.90 in August and \$8.50 in December, potatoes from \$5.50 to \$4, dressed pork and beef from 24 and 25.5 cents per pound, respectively, to 16.5 and 18 cents, butter from 74 to 68 cents, and coffee had fallen slightly, while lemons had fallen from \$6 to \$2 per box. Other commodities showed similar reductions, the only exceptions noted being dried codfish, which had remained stationary in price, and dressed mutton, dried peaches, apples, and raisins for which wholesale quotations were higher than the year before.

Somewhat similar, though less optimistic, findings were reported by the United States Department of Labor. According to the statistics collected by this Department, wholesale prices of commodities were 24 per cent lower in November than at the peak of high prices in May. For the entire year, a drop of 11 per cent in wholesale food prices was recorded, as compared with 28 per cent for clothing and 31 per cent for farm products.

While less comprehensive data as to retail prices were available, indications were that they too were responding, though tardily, to the reductions in wholesale rates. The Department of Labor announced that figures secured in 51 cities showed reductions during the month ended Nov. 15, 1920, in the retail prices of 35 out of 44 articles of food. These reductions included such staple commodities as wheat flour, bread, and other bakery products, corn meal, rice, beans, sugar, pork, and beef, and certain vegetables and canned goods. In amount, however, the reductions were comparatively small, the highest average decrease for any city being that of 5 per cent in Memphis, Tenn. For the entire year, half the foods investigated showed actual increases averaging 1 per cent, making the average annual food expenditure still fully double that in 1913. The ultimate consumer, while beholding a tremendous

shrinkage in the farm value of foodstuffs, was therefore thus far relatively little helped thereby, and was coming to realize anew the wide gap between himself and the producer and the manifold opportunities afforded for speculation and profit-taking on his food supply under prevailing methods of handling and distribution from the farm to his table. More than this, he was also apprehensive of the future, remembering that however welcome might be cheap food, relief from the burden of high prices could not be permanent if obtained by depressing the prices of farm products below the cost of production.

The sugar situation continued to be abnormal and annoying during most of the year. In the hope of overcoming the scarcity of this commodity existing in the fall of 1919, Congress enacted legislation late that year empowering the President to continue the United States Sugar Equalizing Board during 1920 and to take such steps as would secure "an adequate supply and an equitable distribution of sugar at a fair and reasonable price to the people of the United States." Early in January, however, announcement was made that the continuance of this board was impracticable. Soon afterwards a marked increase in prices began, wholesale quotations rising rapidly from 9 cents per pound in December to 22.5 cents in August. Great difficulty was also experienced by consumers in many parts of the country in obtaining adequate supplies, retail sales being quite commonly limited in the larger cities to two pounds at one purchase and retail prices in some cases reaching as high as 30 cents per pound. These conditions led to considerable curtailment in consumption, particularly for home preserving and canning, and caused more or less upsetting of family menus, particularly in the feeding of children.

Suddenly during the fall ample supplies became available, and soon afterward a spectacular reduction in price began. By Dec. 18, 1920, wholesale quotations had dropped below 8 cents per pound and the market was still in an apparently unstable condition. These changed conditions were attributed by the president of the Cuban Cane Sugar Corporation to the "unnecessary" importation of from 350,000 to 400,000 tons of sugar from Java and other distant countries not normally supplying the United States, with a consequent demoralization of the market for the Cuban and domestic supply.

So great was public impatience over the sugar situation that an inquiry by the Federal Trade Commission was directed by Congress. The report rendered by this commission took the ground that "the chief difficulty in the sugar trade, with the government no longer directing distribution, lay in speculation and hoarding," and recommended the continuance as permanent law of portions of the Food Control Act of 1917 prohibiting the hoarding of food and other commodities.

Virtually all the wartime attempts at governmental regulation of the food supply were in abeyance during the year. The United States Grain Corporation ceased its activities May 30, 1920, and trading in futures on the Chicago Board of Trade was resumed soon afterwards. Final action was deferred by Congress on measures to regulate cold storage plants and packing houses. The message of President Wilson of December 7th repeated his recommendation of the previous year for cold storage legislation, and also for the marking of goods destined for inter-

state commerce to show the price at which they left the hands of the producer, no action having been taken on the latter proposal. A bill was passed by the House of Representatives Dec. 8, 1920, prohibiting the use of deceptive and partly-filled containers of food products. Consumers were also directly interested in Federal legislation under consideration at the close of the year to relieve the critical agricultural situation through tariff revision, credit extension, the fostering of coöperative agricultural associations, and other measures discussed elsewhere (see AGRICULTURAL LEGISLATION).

State food legislation was quite limited in amount and scope. Massachusetts and Virginia, however, each adopted comprehensive measures for bakery regulation, looking toward increased sanitation in manufacture and requiring the marking of bread and other products to show their net weight. Massachusetts also prohibited until 1922 so-called combination sales (such as the required purchase of soap or coffee to obtain sugar), gave greater authority to towns and cities in establishing municipal markets, and enacted a new cold-storage law.

FOOD SITUATION ABROAD. While food conditions as a whole showed distinct improvement, the situation was characterized by wide variation in different countries and even in portions of the same country. Heavy exports, particularly of wheat from the United States and Canada, and other causes brought material changes for the better in Great Britain. Food prices reached a maximum in England in the spring of 1920, with a level fully 250 per cent above the pre-war figures. At the close of the year some reductions were being noted, though the trend was slower than in this country.

On the Continent, many discrepancies in both prices and supplies prevailed. Restrictions were gradually being removed in western Europe and Italy, although Switzerland was rationing milk, sugar, and cheese until April, and Belgium sugar in July. In central and eastern Europe the situation was still serious, with many reports of specially deplorable conditions in Poland, Austria, Germany, portions of Russia, and Constantinople. At the close of the year, attempts were being made to raise \$33,000,000 in the United States for the relief of over 3,000,000 children in those countries. Conditions also continued very grave in Armenia and other portions of the Near East, and a new famine centre was reported in China, where unprecedented drought and the approach of winter were imperiling 100,000,000 persons in Shantung and three other northern provinces.

NUTRITION STUDIES. One result of the war was to stimulate interest in scientific investigations relating to nutrition and the world's food supply. Thus in Amsterdam, elaborate buildings were begun during the year for the Netherlands Institute of Animal Nutrition, recently established with private funds and maintained by the government. This institute is to be devoted to comprehensive feeding experiments and other research activities designed to throw light on fundamental nutrition problems. A somewhat similar institute at Aberdeen, Scotland, received a gift of \$50,000 to extend its work. In the United States there was steady progress in developing apparatus and experimental methods, notably in improving the respiration calorimeters and accessory equipment of the United States Department of Agriculture and the Carnegie In-

stitution, the devising of a simplified form of respiration apparatus by the Carnegie Institution and the New Hampshire Experiment Station, and the extension and upbuilding of the experimental kitchen of the Office of Home Economics of the Department of Agriculture.

A number of important statistical and economic studies of the food supply were reported. One of these analyzed the total food production and consumption of the United States, the data indicating that the average daily food consumption per adult man, not corrected for waste, is 120 grams of protein, 169 grams fat, 541 grams carbohydrates, and 4288 calories of energy, as compared with 113 grams of protein, 130 grams fat, 571 grams carbohydrates, and 4009 calories of energy in Great Britain. The chief sources of food were found to be cattle, pigs, and wheat, these supplying collectively 62 per cent of the protein and carbohydrates, 69 per cent of the fat, and 65 per cent of the energy, indicating that in times of national stress these are the important items on which to concentrate attention. The total food supplies of the United States were found, however, to be increasing somewhat more rapidly under present conditions than the population; but considered for a period of years other investigators found this not to be the case.

An elaborate investigation by the Carnegie Institution of human vitality and efficiency under prolonged restricted diet indicated the possibility of conservation in both protein and energy consumption for considerable periods in case of need. On the other hand, observations on food conditions in Germany and elsewhere showed how protracted underfeeding leads to inefficiency in work, apathetic mentality, and diminished resistance to tuberculosis, rickets, and other diseases.

Studies of new or little known foodstuffs indicated the high nutritive value as human foods of soy bean cake and other by-products, potato flour, peanut products, the artificially hardened fats commonly used as lard substitutes, and even whale and shark meat. An interesting conclusion from experiments in which food was rendered unpalatable and consumed in extremely unappetizing surroundings was that such conditions, aside from their undesirability from other standpoints, had very little influence upon the thoroughness of digestion.

Additional evidence was presented of the danger in dietary discussions of regarding food merely as a generic term or even solely as a source of fuel for the body. The essential differences between different foods in nutritive value and adaptability to specific purposes were brought out more clearly than ever before, particularly as regards the wide range in value of their proteins, ash constituents, and the variously termed "accessory substances," "advitants," or "vitamins." This last named group of substances was perhaps more generally studied than any other, notably in its relation to nutritional diseases. A great deal of valuable data was reported along these lines, but the complexity of the problems involved was becoming increasingly evident and their solution admitted to be far from completion.

BOOKS OF THE YEAR. Some of the more important treatises included the following: *The Nation's Food; A Statistical Study of a Physiological and Social Problem*, R. Pearl, Philadelphia and London; *The Feeding of Nations*, E. H. Starling, London; *Food and the Public Health*,

W. G. Savage, New York and London; *Diseases of Nutrition and Infant Feeding*, J. L. Morse and F. B. Talbot, New York.

FOOD CONTROL. See **FOOD AND NUTRITION.**

FOOD PRODUCTION. See **AGRICULTURE.**

FOOT AND MOUTH DISEASE. See **VETERINARY MEDICINE.**

FOOTBALL. Football which has been steadily increasing in popularity since the world war attained its greatest heights in 1920. Never before did the public rally in such large numbers to the various college gridiron contests, even the smaller institutions being unable to accommodate the hosts that appeared for practically every game.

The clash between Harvard and Yale in the Bowl at New Haven attracted a throng of 80,000 and thousands of applications for seats had to be rejected. The Army-Navy battle at the Polo Grounds, New York City, was witnessed by 45,000 despite the fact that the day on which this classic was staged was far from pleasant. A cold wind swept the field and rain threatened at any moment. The Yale-Princeton clash at Princeton drew 54,000 spectators and the Princeton-Harvard game at Cambridge a like number.

The question as to which was the strongest college eleven in the United States aroused the usual unsatisfactory controversy among the gridiron experts. It was generally conceded, however, that in the East, Princeton deserved the mythical championship title. Ohio State captured the Conference College honors while on the Pacific Coast the University of California team stood out most prominently. The Georgia Institute of Technology showed the way in the South.

A summary of the games played by the leading college elevens follows:

Princeton 17, Swarthmore 6; Princeton 35, Maryland State 0; Princeton 34, Washington and Lee 0; Princeton 14, Navy 0; Princeton 10, West Virginia 3; Princeton 14, Harvard 14; Princeton 20, Yale 0.

Harvard 3, Holy Cross 0; Harvard 41, Maine 0; Harvard 21, Valparaiso 0; Harvard 38, Williams 0; Harvard 31, Centre 14; Harvard 24, Virginia 0; Harvard 14, Princeton 14; Harvard 27, Brown 0; Harvard 9, Yale 0.

Penn State 27, Muhlenberg 7; Penn State 13, Gettysburg 0; Penn State 14, Dartmouth 7; Penn State 41, North Carolina 0; Penn State 109, Lebanon Valley 7; Penn State 28, Pennsylvania 7; Penn State 20, Nebraska 0; Penn State 7, Lehigh 7; Penn State 0, Pittsburgh 0.

Pittsburgh 47, Geneva 0; Pittsburgh 34, West Virginia 13; Pittsburgh 7, Syracuse 7; Pittsburgh 10, Georgia Tech. 3; Pittsburgh 14, Lafayette 0; Pittsburgh 27, Pennsylvania 21; Pittsburgh 7, Washington and Jefferson 0; Pittsburgh 0, Penn State 0.

Boston College 20, Fordham 0; Boston College 21, Yale 13; Boston College 12, Springfield 0; Boston College 34, Boston University 0; Boston College 37, Tufts 0; Boston College 13, Marietta 3; Boston College 30, Georgetown 0.

Dartmouth 31, Norwich 0; Dartmouth 7, Penn State 14; Dartmouth 27, Holy Cross 14; Dartmouth 0, Syracuse 10; Dartmouth 34, Tufts 7; Dartmouth 14, Cornell 3; Dartmouth 44, Pennsylvania 7; Dartmouth 14, Brown 6; Dartmouth 28, University of Washington 7.

Syracuse 55, Hobart 7; Syracuse 49, Vermont 0; Syracuse 45, Johns Hopkins 0; Syracuse 7,

Pittsburgh 7; Syracuse 10, Dartmouth 0; Syracuse 0, Holy Cross 3; Syracuse 14, Washington and Jefferson 0; Syracuse 7, Maryland State 10; Syracuse 14, Colgate 0.

Yale 41, Cranegie Tech. 0; Yale 21, University of North Carolina 0; Yale 13, Boston College 21; Yale 24, West Virginia 0; Yale 21, Colgate 7; Yale 14, Brown 10; Yale 0, Princeton 20; Yale 0, Harvard 9.

Navy 7, North Carolina State 14; Navy 12, Lafayette 7; Navy 7, Bucknell 2; Navy 0, Princeton 14; Navy 47, Western Reserve 0; Navy 21, Georgetown 6; Navy 63, South Carolina 0; Navy 7, Army 0.

Army 36, Union 0; Army 38, Marshall 0; Army 27, Middlebury 0; Army 26, Springfield 7; Army 21, Tufts 6; Army 17, Notre Dame 27; Army 53, Lebanon Valley 0; Army 90, Bowdoin 0; Army 0, Navy 7.

Georgia Tech. 44, Wake Forest 0; Georgia Tech. 66, Davidson 0; Georgia Tech. 55, Oglethorpe 0; Georgia Tech. 44, Vanderbilt 0; Georgia Tech. 3, Pittsburgh 10; Georgia Tech. 24, Centre 0; Georgia Tech. 7, Clemson 0; Georgia Tech. 35, Georgetown 6; Georgia Tech. 34, Alabama Tech. 0.

Soccer thrived during 1920, the feature of the year being the trip to Sweden made by the St. Louis All-American team. The Americans won 7 games, drew 5, and lost 2. The only defeats were at the hands of the All-Sweden Olympic team and the All-Stockholm eleven.

The National Challenge Trophy was captured by a Western team for the first time, the victor being the Ben Miller A. C. of St. Louis which defeated the Fore River F. C. of Quincy, Mass., in the final round by 2 goals to 1. The Robins Dry Dock team of Brooklyn had in the meantime eliminated the Bethlehem Steel Corporation eleven which had so long held the national title. The Robins added to their laurels by winning the American Football Association Cup and the Southern New York State Football Association Trophy.

The University of Pennsylvania eleven once more carried off the intercollegiate championship but only after a bitter struggle with Princeton which necessitated two extra games being played.

FORDHAM UNIVERSITY. A Roman Catholic University, at Fordham, N. Y., founded in 1841. The number of students in 1920 was 2300 and the number of members in the faculty was 250. President, Rev. E. P. Tivnan.

FORD TECHNICAL INSTITUTE. See **UNIVERSITIES AND COLLEGES.**

FOREIGN EXCHANGE. See **FINANCIAL REVIEW.**

FOREIGN STUDENTS IN AMERICAN INSTITUTIONS. See **UNIVERSITIES AND COLLEGES.**

FOREIGN TRADE. See **FINANCIAL REVIEW; UNITED STATES**, and articles on foreign countries.

FOREST FIRES. See **FORESTRY.**

FORESTRY. The forest fire situation in 1920 was less disastrous than for several years past, though the spring fire season in the Southwest taxed the energies of the protective force to hold the fires in check. In California the season opened extremely hot and dry, with early June fires in Sierras. By the middle of July an acutely hazardous condition had developed in the Northwest, but the fires were held well in hand until about August, when dry electrical

storms began to start an extraordinary number of fires, chiefly in the high mountains where they are most difficult to get at quickly. Fortunately the fall rains set in early—before the end of August—so that the acute period was relatively brief. The expenditure for fire fighting was approximately \$800,000 as compared with \$3,039,615 in the calendar year 1919 when over 2,007,034 acres of National Forest lands were burned over, with an estimated damage of \$4,919,769.

Canada had about 5000 fires between April and September, 1920, with loss of life in Northern Manitoba and serious loss of property in many sections of the country, notably the burning of St. Quentin, New Brunswick. One big blaze caused by lightning cleaned out 15 square miles in a single section of Quebec. Two forest fires of special violence in Ontario occurred at Ostrom and at Makwa where 25,000 and 12,000 acres respectively were burned over.

THE DECLINING TIMBER SUPPLY. Discussion of the critical forest situation in the country and methods of meeting it occupied an important place, both in the forest literature of the year and in gatherings of forest associations and various organizations of the industries dependent on forests for raw material. Although much difference of opinion existed as to the exact relations of the Federal and State governments and land owners in the future forest policy of the nation, there was practically unanimity of agreement that the first and most essential step is nation-wide protection from forest fires, applicable to all classes of forest land and borne jointly by the land-owners and the public.

On September 28th, representatives of State forest organizations, the United States Forest Service, private forestry associations and educational institutions met at Albany, N. Y., and organized a "National Committee of Forest Fire Prevention." It was the sentiment of the meeting that the committee should organize with representatives from various States in order to take common counsel and to bring pressure to bear for the enactment of both Federal and State legislation along the lines of fire protection. On the same date a "Council of Wood-Using Industries" was organized in Chicago. The newly formed council has two primary objects in view. These are: to perpetuate the forests of the country through fire protection and improved methods of forest management, and to promote the more efficient and economical use of forest products.

The crucial character of the forest situation of the country was made more clear than ever before by the results of a study made in the latter part of the year by the Forest Service, in response to a Senate resolution. The results of this study were embodied in a report entitled "Timber Depletion, Lumber Prices, Lumber Exports, and Concentration of Timber Ownership," submitted to the Senate on June 1. It was found that over two-thirds of the original forests of the United States have been culled, cut over, or burnt, and three-fifths of their merchantable timber is gone. The country is taking about 26,000,000,000 cubic feet of wood annually from its forests and is growing but 6,000,000,000 feet. It is cutting timber of every class, even trees too small for the sawmill, much faster than they are being replaced in the forests. The fundamental cause for the present shortage of newsprint paper is ascribed to the serious depletion of the forests in the Northeastern and Lake States where there

is an over development of the pulp and paper industries. Sixty-one per cent of what timber is left lies west of the Great Plains, far from the bulk of our population, agriculture, and manufacture.

The exhaustion of one forested region after another in the Eastern States it is shown has been reflected in rising transportation costs, in shortages of supply resulting from the overloading of transport facilities, and in a narrowing field of competition between regional groups of sawmills. The distance between the average sawmill and the average home builder is steadily increasing; and we shall soon be dependent for the bulk of our construction lumber upon the forests of the Pacific Coast. These conditions have had a vital bearing upon the high cost of lumber, which, during the year, reached a prohibitive figure for many uses and checked the building of homes which is so urgently needed. At the bottom of the whole problem is placed the idle forest land. The United States contains 326,000,000 acres of cut-over or denuded forests containing no saw timber: 81,000,000 acres of this amount have been completely devastated by forest fires and methods of cutting which destroy or prevent new timber growth. The area of idle or largely idle land is being increased by from 3,000,000 to 4,000,000 acres annually as the cutting and burning of forests continue.

In his annual report United States Forester William B. Greely concludes that to stop the devastation of our remaining forests and put our idle forest lands at work the first step must be the enactment of a Federal law whose chief provisions are (1) a comprehensive plan of Federal coöperation with the States in fire prevention and the development of forest practice, and (2) extension of the National Forests through purchases along the line initiated by the Weeks Act, through the inclusion of other timberlands now in Federal ownership, and through exchange.

CONFERENCE IN LONDON. The British Empire Forestry Conference held in London in July constituted a notable event for foresters and others interested in forest conservation throughout the world. The conference was made up of 35 delegates from all parts of the Empire. Each of the governments included was urged to lay down a definite forest policy to be administered by a properly constituted and adequate forest service. This policy should aim at securing a sustained yield from all classes of timber; encouraging the most economical utilization of wood and other forest products, and maintaining and improving climatic conditions in the interests of agriculture and water supply. The conference formed an Empire Forest Association, the specific purpose of which will be "to promote and develop public interest in forestry throughout the Empire." The headquarters of the society will be in London and membership will be open to organizations, firms, and individuals interested in forestry or the commercial utilization of timber and other forest products.

NATIONAL FORESTS. The net area of the National Forests on June 30, 1920, was 156,032,053 acres as compared with 153,933,700 acres June 30, 1919. The apparent net increase of 2,098,353 acres includes 654,942 acres previously purchased under the act of March 1, 1911, but not given the formal status of National Forests until proclaimed as such during the past fiscal year. The actual net increase of 1,443,651 acres

is due principally to the addition by act of Congress of about 1,000,000 acres, embraced in the Thunder Mountain region in Idaho, to the Idaho and Payette National Forests. Special acts of Congress made small additions to five other National Forests, while Presidential proclamation added 130,355 acres to the Coconino and Prescott National Forests, for the protection of important reclamation projects on the Verde River. Certain small additions and eliminations due to land exchanges were also made.

Owing to the virtual exhaustion of the appropriation for National Forests in the East, little progress was made in acquiring new lands in the White Mountains and southern Appalachians. At the close of the year 1,420,208 acres had been purchased in these regions. In addition 12,094 acres were purchased in the Ozark Mountains in Arkansas. All purchased lands have now been proclaimed and organized as National Forests.

The total receipts from the National Forests for the year ending June 30, 1920, were \$4,793,482, an increase over 1919 of \$435,067. Although the total expenditures of Forest Service appropriation were \$5,966,869, the receipts exceed by \$78,000 the cost of protection and administration on the National Forests, exclusive of emergency fire expenditures, the construction of improvements, and special development and research projects.

FOREST PRODUCTS LABORATORY. The year marked the completion of 10 years of research by the Forest Products Laboratory at Madison, Wis. Its work, at first little appreciated, is now generally recognized both in this country and abroad as of immense value to science and industry. In all, the investigations of the Laboratory have cost about \$2,000,000 and are believed to be now saving industry at least \$30,000,000 annually. The laboratory will make investigations connected in one way or another with the national defense a part of its regular program, in cooperation with the War and Navy Departments. New projects started include the design of various types of airplane struts and the development of a plywood airplane wing. Extensive tests were made on white ash and other species to determine the effect of spiral grain and of various other defects and blemishes on strength. In addition to specific designs, the closer utilization of existing supplies of aircraft woods was investigated and types of built-up beams were developed. Knowledge of the mechanical properties of wood was extended through 62,000 tests, covering 57 different species. The total number of such tests made by the Laboratory is now 500,000.

Among the subjects of investigation were the effect of commercial processes of wood preservation on the strength of structural timber, the toughness and shearing strength of various kinds of plywood, its bolt bearing and screw-fastening properties, and the impairment of strength of wood under continuous vibration. The services of the box-testing laboratory were extensively used by manufacturers and shippers. A 40-page catalogue of service tests of railroad ties, covering all installations on which the laboratory is keeping inspection records, was completed and printed in the 1920 proceedings of the American Wood Preservers' Association.

Wood distillation studies have shown that the addition of a small amount of sodium carbonate increases the yield of wood alcohol by from 50

to 60 per cent without seriously affecting the yields of the other valuable products. The method is effective, however, only when the material for distillation is in the form of small pieces of wood or sawdust briquettes. Forest Service water spray kilns have proved so satisfactory in actual operation that they have been installed or are being built not only in the United States but in India, Australia, New Zealand, and Mexico. Work on the production of book and similar papers from cotton linters was continued, and mill tests have demonstrated that a very high grade of paper can be made. Two large companies are now erecting plants for the manufacture of paper from this material, basing their plans largely on the experimental work conducted by the laboratory. Practical courses in kiln-drying, glue work, and boxing and crating have been developed to meet these requests more effectively. These courses, largely attended by factory superintendents, have proved one of the most satisfactory means of getting the results of the laboratory into actual use.

INSTITUTIONS, PERSONNEL, ETC. In recognition of his services to the Dominion and the University of Toronto for the last 12 years the university conferred the degree of Doctor of Laws on Prof. Emeritus B. E. Fernow. On March 14, Colonel W. B. Greeley was appointed Chief Forester of the United States to succeed Colonel Henry S. Graves, resigned. Franklin Moon was elected Dean of the New York State College of Forestry.

The University of Nanking has established a business for the sale of Chinese tree seeds, with an agent in New York City. The profits from the business are all devoted to the furthering of forestry in China. According to John H. Reiser, Dean of the College of Agriculture and Forestry of the University, the best evidence that interest in practical forestry is increasing in China is the large number of tree planting operations being made by individuals, organizations, and lesser governmental divisions. Thus far the Central Government has taken practically no part in the work of reforestation. The largest single item in Finland's 1920 Agricultural Budget is that of forestry, being estimated at 8,800,000 marks, or nearly 13 per cent of the total. Among recent developments in the Balkan region of Europe may be mentioned the establishment of provincial offices for forests and agricultural administration in Jugo Slavia, a new forestry association in Bosnia-Herzegovina, and the establishment of a forest school in Sarajevo, offering a two-year course.

Plans of the Pennsylvania State Forestry Department for extensive reforestation in the woods and the waste lands of the State called for the largest amounts of seed ever used, and efforts were being made to secure a large supply of seed from indigenous trees. While most of the planting will be made on State and private timberland, shade trees will also be grown for free distribution to cities and boroughs for municipal and educational plantings.

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FORMOSA, or TAIWAN. An island belonging to Japan, situated off the coast of the Chinese province of Fukien. Capital, Dai-hoku (or Taipei). Area, 13,839 square miles; population estimated in 1918, 3,698,918 (1,919,701 males and 1,779,217 females). The population of Dai-hoku was 102,249. Other towns are Tainan, Kagi, and Taichu. The chief agricultural product is rice, and among the others are sugar cane, tea, sweet potatoes, jute, ramie, and turmeric. Camphor, which is a government monopoly, is produced in the forests. In 1918-19, the production was about 6,000,000 pounds, which was less than 50 per cent of the production of the year before. Among other industries are fisheries, sugar manufacture, flour-milling, and the manufacture of tobacco, oil, spirits, iron work, glass, bricks, soap, etc. Livestock is raised to a considerable extent. Latterly mining has developed, and in 1918, the production of coal reached 801,520 tons. The commerce is largely with Japan, and in trade with foreign countries, China and the United States take the lead. In 1918 the imports amounted to 104,145,875 yen; exports, 155,626,870 yen. The chief exports in 1918, were: Tea, 8,587,148 yen; sugar, 6,223,243 yen; camphor, 2,942,011; coal, 2,893,754. The chief imports were rice, opium, oil-cake, beans, and tea-seed. The revenue and expenditure for 1919-20 balanced at 70,305,452 yen. The main items of expenditure were communications and public works, and the main sources of revenue were government enterprises. The local finances receive annual subsidies from Japan, ranging from 5,000,000 to 9,000,000 yen. In 1917-18, there were 318 miles of government railway open for traffic, and over 974 miles of private railway. Post offices in 1918 numbered 166, and telegraphs had a mileage of 606.

China ceded the island to Japan, May 8, 1895, and Japanese civil government was established there, March 31, 1896. In 1909, the Japanese undertook a plan for colonization and a number of Japanese villages grew up which in 1916 had a population estimated at 3268. The island is under a Japanese governor-general.

FORT, JOHN FRANKLIN. Former Governor of New Jersey, died at South Orange, N. J., November 17. His health had been failing since April, 1919, and had caused his resignation from

the Federal Trade Commission a year before his death. He was born at Pemberton, N. J., March, 1852, and studied law at the Albany Law School, being admitted to the bar in 1873. He was judge of the District Court of Newark, 1878-86, and justice of the Supreme Court of the State, 1900-7. From 1908-1911, he was governor of New Jersey. In 1914, he was sent by the United States as special envoy to the Dominican Republic and in 1915 to Haiti. For many years he was prominent in the Republican politics of his State and he was several times a delegate to National Conventions. After his election to the governorship of New Jersey, he declared his independence of boss rule and for the adoption of the "new idea" in politics. His administration was marked by his firmness on the excise questions. He had previously shown vigor in enforcing the laws against gambling when he was justice of the Supreme Court.

FORTY-EIGHT, COMMITTEE OF. This Committee was reorganized after the election of 1920.

Its purposes, however, remain very similar. The platform is as follows: "Our purpose is the abolition of privilege, meaning by privilege the unjust economic advantage by possession of which a small group controls our natural resources, transportation, industry, and credit, stifles competition, prevents equal opportunity of development for all, and thus dictates conditions under which we live. To accomplish this we advocate: (1) Public control of natural resources by taxation of all land values, including land containing coal, oil, natural gas, mineral deposits, large water powers, and large commercial timber tracts, in order to prevent monopoly and speculation, to aid industry, and to force idle lands into use. (2) Public ownership of railroads, canals, and pipe-lines, including all necessary distributing and terminal facilities and all necessary means of communication, in order to give the same service to all users. (3) Equal rights, economic, legal and political for all citizens, and all Civil Rights, including Free Speech, Free Press, and Peaceable Assembly, as guaranteed by the Constitution."

The following is quoted from a report of the Executive Committee: "The crux of the situation lies in the control of our natural resources, and transportation system, by a small group of financiers, who by reason of their control reach into every phase of our daily life and dictate our living conditions. Through their ability to control the sources of our supplies they dictate the quantity of production and regulate the prices of practically everything we eat, wear, and consume. Through their control of transportation and the channels of distribution they stifle competition, inflate costs and create monopolies whose success is in exact proportion to their ability to eliminate independent competitors from entering the same field of industry. Thousands of acres of coal lands have been acquired and are being held out of use in order that through a limited production exorbitant prices may be established and maintained. Large areas of ore lands are owned and similarly kept idle so that independent competitors in the steel industry may be barred from access to the natural and necessary sources of supply. Our agricultural food supply—often over-produced by the ever-hopeful farmer—frequently rots on the ground because through the same control, its distribution to the waiting consumer is choked

off, so that the meagre proportion that leaks through will not endanger prices and 'break the market.' Our beef, lard, butter, eggs, leather, and the multitudinous by-products connected with the packing house industry through advantages extended to the packers in transportation, deliveries have been monopolized, which means that a large share of our population is denied food products essential to their health. These financiers for more than a generation have likewise controlled the machinery of both the Democratic and Republican parties and have thus frustrated every attempt of the people to destroy these special privileges, which are the source of their power. It is essential to focus our program upon the abolition of these special privileges, upon the removal of these artificial economic advantages through which this financial control operates, and produces the existing conditions herein described. To accomplish this, and thus open the way to an equal opportunity of development for all we advocate, Government Ownership of railroads, government control of natural resources, the recognition of equal economic legal and political rights for all, the abolition of government by injunction, and the recognition of labor's right to organize and bargain with its employers upon an equal basis, through representatives of its own choosing. Such a program strikes at the root of the evils which are responsible for the critical situation we are facing to-day. It will directly or indirectly benefit all except those who are affiliated with the small group who now hold the prosperity of our country in the hollow of its hands, and are using its control for selfish purposes, inconsistent with and highly dangerous to the public welfare. And it will merit the support of all voters, who as citizens and consumers are now feeling the increasing pressure of high prices and scant production." Chairman of the Executive Committee, J. A. H. Hopkins; Secretary, Allen McCurdy; headquarters, at 15 East 40th Street, New York City.

FRANCE. A European republic constituting the westernmost state of central Europe, between 42° 20' and 51° 5', N. latitude, and 7° 45' E. and 4° 45' W. longitude, separated from England by the Channel and the Straits of Dover; area before the war, 207,054 square miles; divided for administrative purpose into 87 departments, including the island of Corsica, but not including Alsace-Lorraine, which was reincorporated in the French administrative system after the war. See below and also under ALSACE-LORRAINE.

POPULATION. According to the census of 1911, the population was 39,602,258, an increase of about 350,000 since 1906. For details of population by departments, and chief cities, and for vital statistics according to the census of 1911, see preceding YEAR BOOKS. Capital, Paris, with a population before the war of 2,888,110.

The return of Alsace-Lorraine added 5605 square miles to the above area, and a population, according to the census of 1910 of 1,874,014; thus bringing the total area of France to 212,659 square miles and the total population to 41,475,523. The three former divisions of Alsace-Lorraine, namely, Lower Alsace, Upper Alsace, and Lorraine, were formed into the departments of Bas Rhin with an area of 1848 square miles and a population of 700,938; Haut Rhin, with an area of 1354 square miles and a population of 517,865; and Moselle, with an area of 2403 square miles and a population of 655,211.

By article 45 of the Treaty with Germany, France secured the exclusive rights of exploiting the coal rights of the Saar Basin, which has an area of about 220 square miles and a population (pre-war figures), of 640,733, and for the next 15 years this region was to be under a commission of five, chosen by the League of Nations. At the expiration of that period, the population was to decide whether it would remain with France, return to Germany, or continue under the rule arranged by the Treaty. See the article WAR OF THE NATIONS.

The question of repopulation which had always been serious was renewed with especial anxiety after the war and the discussion of it continued throughout 1920. Between the censuses of 1901 and 1906, there had been an increase of only 1.4 per cent and between those of 1906 and 1911 of 1.7 per cent. From 1914 to 1918 inclusive, there had been a heavy excess of deaths over births, rising from 53,327 in 1914 to 267,640 in 1915 and 389,575 in 1918. Marriages in 1917 numbered 158,508 and in 1918, 177,822. In 1913, the average birth rate was 1.88 per cent of the population, and in 1918, 1 per cent. During the war, about 1,500,000 had been killed to say nothing of losses and the indirect losses, and the vast numbers incapacitated as the result of wounds or disease. In the 12 months succeeding the armistice the registered births numbered 403,502, and the deaths, 620,000. This was attributed largely to the high cost of living, the shortage of houses, and the tendency to crowd into the cities, especially Paris. In the course of the year 1920 statistics, however incomplete, that seemed to afford any clue to the subject were eagerly published by the press. The following item appeared early in November. The department of the Eure had for 10 years showed an excess of deaths over births. Added to this the war had so reduced the number of young men in the country districts that manual labor became extensively scarce and this was especially serious as the department was essentially agricultural and stood at the head of all departments in respect to wheat production. During the past six months of 1920 the figure for births was 3556 and of deaths 3293 including 185 stillborn. Thus, a small excess on the right side of the account had appeared. In certain districts, a considerable percentage of excess was reported.

Preliminary figures applying for the first time to all the 90 departments, including the 10 departments that had been invaded and the three departments of Alsace-Lorraine, showed a decided improvement. Births exceeded deaths by 67,946, whereas during the first half of the year 1919 (figures for the 77 departments, not including the invaded departments and Alsace-Lorraine) deaths exceeded births by 192,052.

EDUCATION. Primary education is free and compulsory for all children between the ages of six and 13. In 1917-18 the schools of France and Algeria numbered 48,485 with 70,581 teachers and 3,034,913 pupils. Secondary instruction is supplied by lycées maintained by the state and colleges maintained by the communes; free schools are established by private persons and associations. The public secondary institutions in France and Algeria, in 1915 comprised 104 lycées with 53,028 pupils and 211 communal colleges with 28,608 pupils; at the end of 1917, the number of pupils was respectively, 59,128 and

31,418. There were in addition 174 public secondary institutions for girls with 35,736 (1916). Higher education is supplied by the state universities and by special schools directed by the state; also by various private faculties and schools.

Year	Horses	Mules	Asses
1919	2,413,190	167,180	303,100
1918	2,232,930	139,070	311,890
1917	2,303,400	143,990	318,960
1916	2,245,630	147,630	326,570
1915	2,209,190	145,840	322,570
1914	2,205,190	151,710	336,710

The universities number 16 and are situated at the following places: Paris, Strasburg, Lyons, Bordeaux, Toulouse, Grenoble, Montpellier, Aix-en-Provence, Rennes, Poitiers, Nancy, Caen, Dijon, Lille, Clermont-Ferrand, and Besançon. Of these, the largest is the university at Paris, with 6025 students, in 1917. The next in numerical importance are Strasburg, Lyons, and Bordeaux. The number of students in the faculties of law, medicine, science, and letters in 1917 was 14,121 of whom the sciences were the most numerous attended (3585), while the law faculty came next (3566). Besides the above there are various higher institutions depending on public instruction, including the Collège de France; the Museum of Natural History, which gives instruction in sciences; the Practical School of Higher Studies, with its seat at the Sorbonne, giving instruction in history, philology, mathematics, sciences, etc.; the superior normal school; the Ecole des Beaux Arts, etc. There are also numerous and diverse institutions of higher or technical instruction, which depend on other ministries, including schools of commerce, agriculture, military science, mines, etc.; and there are a large number of technical schools of lower grade, which depend on the Ministry of Commerce.

AGRICULTURE. The area and production of the principal crops in 1919, according to provisional figures are as follows:

Crop	Area (1000 acres)		Produce (1000 metric tons)	
	1919	1918	1919	1918
Wheat	11,582	11,582	4,844	4,844
Mixed corn	228	228	93	93
Rye	1,837	1,837	707	707
Barley	1,375	1,375	514	514
Oats	6,980	6,980	2,448	2,448
Potatoes	3,175	3,175	7,763	7,763
Root, sugar				
Tobacco				

The following table shows the official figures (revised) for the cereal and potato crops of 1919 and 1918 compared with those of 1914, in quintals:

	1919	1918	1914
Wheat	49,653,700	61,453,840	76,936,060
Mixed grain	967,940	959,820	1,253,550
Rye	7,299,370	7,349,860	11,147,140
Barley	4,999,840	5,982,000	9,758,150
Buckwheat	2,719,690	2,241,800	5,324,010
Oats	24,935,840	25,619,760	46,206,840
Corn	2,534,110	2,478,070	5,722,940
Potatoes	77,305,620	65,197,220	119,927,130

The wide difference between the production as shown in the above figures was being rapidly reduced in 1920 and there was promise of an early return to the level of pre-war production. According to the customs returns, the wine production for 1919 was 1,132,161,000 gallons, as compared with 929,810,000 gallons in 1918. The cider production in 1919 was 479,179,000 gallons. The French Ministry of Agriculture pub-

lished in the *Journal Officiel* of July 21, 1920, the following statistics of the number of farm animals in France on Dec. 31, 1919, as compared with the numbers existing on December 31 of the five previous years:

Oxen and cows	Sheep	Swine	Goats
12,373,660	8,990,990	4,080,560	1,166,770
12,250,820	9,061,110	3,080,020	1,197,490
12,241,980	9,881,870	4,165,400	1,160,990
12,341,950	10,845,280	4,361,900	1,176,510
12,520,110	12,261,780	4,909,890	1,231,330
12,668,240	14,038,860	5,926,290	1,308,150

The French Ministry of Agriculture published in the *Journal Officiel* at the close of the year, the following approximate figures for the French crops of certain classes of agricultural produce in metric tons at 2204.6 pounds:

Crops	Metric tons
Corn	426,567
Millet	14,276
Buckwheat	362,911
Potatoes	10,315,590
Jerusalem artichokes	1,343,725
Turnips	2,200,575
Cabbage	5,282,223
Beets:	
Sugar	2,055,614
Distillery	461,520
Forage	15,601,539
Flax:	
Straw	37,641
Seed	11,320
Hemp:	
Straw	13,251
Seed	5,120
Hops	1,017
Tobacco	13,193
Lentils	8,961
Peas	12,158
Beans, broad	61,588
Beans, n. e. s.	100,590
Apples and pears for cider making	1,254,953

The increase shown in the number of horses and mules for 1919 was due to heavy importations for the purposes of the war, the figures for 1919 including the horses and mules disposed of in France by the British army.

The enormous increase in wages, and the price of agricultural implements, fertilizers, and other necessities in agricultural production are illustrated by the following comparison of pre-war prices with that of 1920: Nitrate of soda had risen from 25 francs per 100 kilograms to 150; plows (per kilogram) from one-half franc to 4½ francs; harvesters from 900 francs apiece to 4500; yearly wages of carters (with food and lodging) from 600 francs to 3500 francs; shepherds, 500 to 3000; cowherds, 400 to 2400; servants, 240 to 1600; wages per day of ordinary workmen, from four francs to 15 francs. The change in the price of farm animals as shown in the following table, caused great uncertainty in respect to returns, since reduction of prices was inevitable and the farmer constrained to purchase or retain live stock could form no estimate of its future value:

	Pre-war Francs	In 1920 Francs
Horses	1,200	5,500
Oxen	800	5,000
Milch cows	550	4,000
Sheep	30	240
Sucking pigs	30	250

COAL PRODUCTION. In an address by the finance minister at Strasburg, October 20, it was pointed out that the total production of combustible minerals in 1913 had been 40,844,218 tons; in the first eight months of 1920, it had been 15,612,408 tons which included the exploitation of the Alsace-Lorraine mineral deposits. Thus, a production of 24,000,000 tons for the current

year was indicated. In 1913, the mines destroyed during the war had supplied 20,000,000 of the above figure for that year. In the first eight months of 1920, these mines had supplied something over 2,000,000,000 tons. In respect to coal, the following information is supplied by the United States Bureau of Foreign and Domestic Commerce, based on the investigations of M. Eduard Payen for *L'Economist Français*:

Contrary to the natural expectation that the output of coal in France would increase considerably on the cessation of hostilities the figures for the production in 1919, showed a marked decline in the industry. From 29,311,000 tons in 1918 the national output fell to 22,341,864 tons in 1919, and of that total the newly acquired Lorraine mines accounted for 2,375,000 tons. Ignoring the amount supplied by Lorraine, the figures for the years just previous to and during the war follow:

Year	Tons	Year	Tons
1910	38,350,000	1915	19,908,000
1911	39,230,000	1916	21,477,000
1912	41,145,000	1917	28,940,000
1913	40,844,000	1918	29,311,000
1914	29,786,000	1919	19,966,000

Thus when the amount contributed by Lorraine was deducted from the figures for 1919, the total was but little above that of 1915, the first calendar year of the war. As to the causes, the following points were brought out: The demobilization and peace were responsible for the reduction in the effective employees at the mines. Almost immediately the mines lost, first, the prisoners of war, numbering around 18,000; second, among the mobilized workers, those who had looked only for temporary quarters; and lastly, those from the devastated areas who lost no time in returning there. The number of miners employed in the coal fields of France, who totaled 207,000 on Dec. 31, 1918, fell by July 1, 1919, to 163,000. After that they were slightly augmented, owing largely to better wages and the termination of certain other war industries. The Commission of Mines arranged with the Italian Director of Emigration for the allotment of 7000 Italian laborers to work in the French mines. Furthermore, through the efforts of the Director of Mines and the Department of Labor, there was assured to the mines a force of Polish workers recruited by that government. The total number of laborers in the coal mines of France on Dec. 31, 1919, was 188,000, that figure taking in the 10,177 workers in the Lorraine fields. To this diminution in the number of laborers is to be added a reduction in the individual daily output which became more marked every month. In 1913, the last normal year, the individual yield averaged 3074 kilos a day; during the last few months of 1919 it fell to 2617 kilos. Other influences continued practically the same as in 1918. A dearth of transports, which burdened the coal-mining industry as all others, shortage and delay of freight cars, and insufficiency of mining apparatus all worked to check the total production. Importation from England and the United States was retarded by an exchange almost prohibitive. When there was need of materials the exploiter encountered a double uncertainty, delay and price fluctuation, neither of which was offset by any guarantee on the part of the selling agent. Under such conditions the output of 1919 was very discouraging. But it must be noted that it was found impossible to obtain

from Germany the supply as stipulated in the treaty of peace. In place of the 14,000,000 tons which were promised for the second half of 1919, only 1,100,000 tons were furnished. The Saar furnished 2,305,000 tons and Belgium 1,900,000 tons. The remainder was obtained from England, whose shipments increased to 16,700,000 tons.

In the month of October, the deliveries of German coal continued to improve as the result of the Spa agreement. They amounted during the month to 2,186,968 tons, of which France received 1,520,334, the rest being distributed among Italy, Belgium, and Luxemburg. In November the French were purchasing American coal at a considerable rate, the amount taken in that month being 700,000 tons, at a price of about \$15 a ton. At the end of the month the chief of the Bureau of Coal Purchases declared that France could not pay the price to Great Britain agreed upon in the arrangement of 1920, and unless the British government could make better terms France would have to purchase from the United States which offered not only a lower price, but long term credit. See PETROLEUM.

INDUSTRIAL LOSSES. In the following table the number of industrial establishments affected, employing at least 20 persons, is contrasted for the different Departments, together with the number and percentage of those that had resumed business by May 1, 1920:

Department	Number of establishments included in official census	Number of establishments where business is resumed	Proportion of establishments in which business is resumed
Nord	1,931	1,508	78.09
Ardennes	396	294	74.20
Aisne	833	215	64.50
Somme	256	151	63.90
Pas-de-Calais	166	117	70.40
Meurthe-et-Moselle	158	127	80.30
Oise	104	90	86.50
Marne	82	57	69.50
Meuse	55	33	60.00
Vosges	47	35	74.40
Total	3,508	2,627	74.80

The losses in the Nord were easily the heaviest, and fortunately the work of reconstruction was there well advanced. In general, practically three-fourths of the industrial group had resumed operations, but very few concerns were able to transact business on the pre-war scale.

DEVASTATED REGIONS. In respect to the metal-working industries, France held the fourth place in 1913 in the production of cast-iron and the fifth place in the production of steel. At the time of the armistice these industries which had been ruined during the war practically had ceased to exist. In September, 1920, however, it was reported that 33 blast furnaces were in operation in the region of Longwy, Briey, and Nancy, and that five were ready to function and 27 in process of construction. The same progress was indicated in several other industries. In spinning and weaving, for example, the east of France employed in 1913, some 15,000 working men distributed among 30 plants. In the autumn of 1920, the production had attained about one-fourth of its former quantity and it was believed that within six months it would reach 60 per cent of its pre-war capacity. Satisfactory results were also reported for the manu-

facture of building material. For example, the brickyards of Pont-à-Mousson, which turned out 20,000,000 bricks in 1914 had reached 50 per cent of the output in the autumn of 1920. The factories of Longwy were reported to have attained three-fourths of their pre-war output; at other points from one-half to nearly the whole of pre-war capacity was reported to have been attained. Figures published in the autumn of 1920 showed the production of bricks to be 35 per cent of the pre-war output; tile 50 per cent; cement 90 per cent.

In his address of October 20, at Strasburg, the finance minister gave some figures in regard to the reconstruction of the invaded regions. He said that 77 per cent of the industrial plants which had been pillaged or destroyed had either completely or partly resumed operation and that their personnel had now risen to 42 per cent of the force employed before the war. Out of 1,757,000 hectares of cultivable land 66 per cent had been tilled and 50 per cent sown despite the fact that 1,521,000 hectares of the total had been ravaged. The agricultural returns had surpassed all hopes. The 10 departments had given 10,000,000 quintals of wheat or a sixth of the total production of France. Oats yielded one-quarter of the production. Everywhere the work of restoration was rapidly going on. The mines were being pumped out and the railways improved. Out of 3000 kilometres of destroyed line there were only nine kilometres to rebuild. The peasants had shown remarkable energy in bringing back the soil to cultivation. The Department of the Meuse, where the long and destructive campaign of Verdun had taken place and where two years before great stretches of barren land were to be seen, promised now to supply more grain than was necessary for its inhabitants and to have a considerable excess for exportation. Out of the 300,000 houses completely destroyed, a large number had been rapidly rebuilt and others were in process of construction,

a general strike which was said to have caused the partial loss of employment of about 140,000 persons. Figures for the department of the Nord showed a falling off of 20 per cent of operating time in the woollen, cotton, linen, lace, clothing, and related industries. This was due to the enormous fall in price. The retail stores being almost completely stocked and buying being slow, there were few sales among the wholesalers. The same condition in fact prevailed as in many parts of the United States, but the situation was reported to be extraordinarily acute.

COMMERCE, ETC., 1919 AND 1920. The following information in respect to foreign trade of France for the year 1919, is supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: In 1919 the foreign trade of France, exclusive of gold and silver, coin, bullion, and baser coinage, was valued at 38,491,687,000 francs or \$5,272,833,835 (at 7.30 francs to the dollar) as compared with 27,024,078,000 francs or \$4,825,728,214 (at 5.60 francs to the dollar) for 1918, and 15,301,549,000 francs or \$2,953,198,957 (at 5.18 francs to the dollar) for 1913. The value of imports amounted to 29,778,519,000 francs (\$4,079,249,178) as against 22,301,384,000 francs (\$3,982,390,000) in 1918, and 8,421,332,000 francs (\$1,625,317,076) in 1913; and the value of exports was 8,713,168,000 francs (\$1,193,584,657), in 1919, 4,722,694,000 francs (\$843,338,214) in 1918, and 6,880,217,000 francs (\$1,327,881,881) in 1913. Imports of gold, silver, bullion, and the baser coins in 1919 amounted to 111,289,000 francs (\$21,478,775) as compared with 69,723,000 francs (\$13,456,539) in 1918 and with 974,980,000 francs (\$188,171,140) in 1913, and the values of exports during 1919, 1918, and 1913, by principal groups and exclusive of specie, bullion, and the baser coinage:

Principal groups	1913		1918		1919	
	Francs	Dollars	Francs	Dollars	Francs	Dollars
IMPORTS						
Food products	1,817,579,000	350,792,747	5,639,730,000	1,007,094,643	8,629,461,000	1,182,117,944
Industrial materials	4,945,732,000	954,526,276	10,065,748,000	1,797,455,000	13,221,735,000	1,811,196,578
Manufactures	1,658,021,000	319,998,053	6,595,906,000	1,177,840,357	7,927,823,000	1,085,934,656
Total	8,421,332,000	1,625,317,076	22,301,384,000	3,982,390,000	29,778,519,000	4,079,249,178
EXPORTS						
Food products	838,898,000	161,907,314	419,683,000	74,943,393	969,663,000	132,830,548
Industrial materials	1,858,091,000	358,611,563	997,807,000	178,179,822	1,936,813,000	265,316,849
Manufactures	3,617,046,000	698,089,878	2,812,849,000	502,294,464	5,283,772,000	728,804,383
Postal packages	566,182,000	109,273,126	492,355,000	87,920,535	522,920,000	71,632,877
Total	6,880,217,000	1,327,881,881	4,722,694,000	843,338,214	8,713,168,000	1,193,584,657

the inhabitants meanwhile living in provisional shelters.

But, while favorable reports were made as to

The figures of French trade exclusive of specie and bullion by principal countries during 1919, 1918, and 1913, are given in the following table:

Countries	1913		1918		1919	
	Francs	Dollars	Francs	Dollars	Francs	Dollars
IMPORTS						
United States	894,742,000	172,685,206	7,140,164,000	1,275,029,285	8,133,280,000	1,114,147,945
United Kingdom	1,115,186,000	215,231,248	6,391,653,000	1,141,902,322	7,201,477,000	986,503,700
Argentina	369,268,000	71,268,724	1,072,904,000	191,590,000	1,298,802,000	177,918,082
Spain	281,592,000	54,347,256	577,697,000	103,160,178	1,087,305,000	148,945,890
Algeria	330,841,000	63,852,313	623,843,000	111,364,822	1,025,176,000	140,435,068
Belgium	556,277,000	107,361,461	5,009,000	894,464	909,333,000	124,566,164
Italy	240,513,000	46,419,009	818,010,000	146,073,214	833,281,000	114,148,082
Brazil	174,273,000	33,634,689	551,010,000	98,394,643	813,439,000	111,430,000
Germany	1,068,800,000	206,278,400			590,696,000	80,917,260

the quick industrial recovery in the devastated regions, there were signs toward the end of the year that much damage was being done to industry by strikes. In the region of Lille, the textile industry was seriously embarrassed by

Preliminary figures for the foreign trade of the entire year 1920 were as follows: Total exports, 22,434,757,000 francs for 1920; total imports, 25,404,951,000 francs. The exports of food products from France during 1920 amount-

ed to 2,211,323,000 francs; of industrial materials, 4,772,124,000 francs; of manufactures, 14,252,907,000 francs; of postal packages, 1,198,403,000 francs. The imports of food products amounted to 8,618,155,000 francs for 1920; industrial materials, 16,800,548,000 francs; and manufactures, 9,986,248,000 francs. The adverse trade balance for 1920 was 12,970,194,000 francs against 23,919,667,000 francs for 1919, a decrease of 10,949,473,000 francs.

The figures given out by the customs house indicated the following movement of foreign trade, during the first nine months of 1920: The balance of trade against France during the first nine months of 1919 was 17,853,000,000 francs; for the first nine months of 1920, it was 10,632,000,000 francs, thus showing an improvement to an extent of more than 7,000,000,000, owing to the increase of exports. The value of exports as compared with previous year had increased 147 per cent. while the imports had increased 11 per cent. The sale of manufactured articles showed a surplus of 6,576,000,000 or 137 per cent. The increase in the exports for the first nine months of 1920 resulted from the purchase of raw materials and there was hardly any increase in the exports of manufactured articles. Imports of food products diminished to the extent of 685,000,000 francs or 9 per cent. The following table shows the comparison of exports and imports by classes for the first nine months of 1919 and 1920 respectively:

	Imports	First 9 months 1920	First 9 months 1919	Difference for 1920
Foodstuffs		6,727,751,000	7,413,563,000	- 685,812,000
Raw materials		12,618,645,000	9,542,228,000	+3,076,419,000
Manufactured goods		7,842,675,000	7,611,631,000	+ 231,044,000
Total		27,189,071,000	24,567,420,000	+2,621,651,000
	Exports			
Foodstuffs		1,529,501,000	709,085,000	+ 820,416,000
Raw materials		3,861,821,000	1,205,090,000	+2,456,731,000
Manufactured goods		11,366,389,000	4,790,042,000	+6,576,347,000
Parcel post				
Total		16,557,711,000	6,704,217,000	+9,853,494,000

In normal times imports exceeded exports by 20 to 25 per cent. After 1913, the excess was as follows: 1914, 31 per cent; 1915, 180 per cent; 1916, 232 per cent; 1917, 358 per cent; 1918, 372 per cent; 1919, 242 per cent. The increase of exports in the first nine months of 1920 over the corresponding period in 1919, shown in the above table, was distributed among all foreign countries and all of the colonies, but the chief increases were in sales to Belgium, England, Switzerland, and the United States. A noteworthy feature of the exportation was the sale to Germany which during the first nine months of 1920, amounted to 751,500,000 francs, while in the previous year no exportation to Germany had been registered. The imports to France during the same period fell off heavily in respect to England, Spain, and Brazil, but increased in respect to Belgium, Argentina, and Switzerland. France imported from Germany during the first nine months of 1920 goods to the value of 1,795,000,000 francs, of which 896,000,000 consisted of coal. A programme was prepared toward the close of the year for the promotion of commerce between France and Canada. Its main feature was the bringing of the two countries into direct relation and providing means of information in each in regard to the necessities and resources of the other. It was planned to exhibit samples of French goods throughout Canada in an exposi-

tion train and to conduct a party of French representatives along the principal Canadian railway routes. A great museum at Montreal was to receive the French exhibit and display it for the following six months. France had declared all her treaties of commerce at an end, including the treaty with Canada. The French Chamber of Commerce at Montreal had pointed out that this inevitably would occasion considerable difficulties and that already the termination of the treaty had worked against French exporters.

The merchant marine at the end of September, 1919, had reached a tonnage of 2,400,000, which nearly equalled the figure before the war, and it had increased since then. In the French shipyards, 513,000 tons were under construction at the end of 1919 and since that time some 30,000 tons had been purchased abroad. Private French shipyards would be able to add to the merchant marine in 1920, 310,000 tons; in 1921, 445,000, and in 1922, 500,000, thus bringing the total at the last-named date to 1,255,000 tons, not including certain new orders which would amount to 725,000 tons.

FINANCE: SITUATION AT THE BEGINNING OF 1920. According to the *Statesman's Year Book* for 1920, the budget for 1920 provided for an expenditure of 17,861,140,000 francs toward which existing taxes were expecting to contribute 9,367,800,000 francs, and new taxes, 6,516,406,000 francs. The expenditure in the extraordinary budget was placed at 7,568,083,055 francs.

During 1919 the note circulation increased 6,220,000,000 francs, the outstanding circulation at the end of 1919 being 37,275,000,000 francs. The metallic reserve at the end of December, 1919, held against this paper in circulation was 5,578,500,000 francs and the silver reserve was 268,100,000 francs. Down to the close of 1919 the amount advanced to the government by the bank of France was 25,500,000 francs exclusive of the permanent advance of 200,000,000 francs without interest. During 1919 there were three important loans floated, namely, 1,500,000,000 francs bearing 5 per cent issued by the city of Paris in May; 750,000,000 francs bearing interest at 5 per cent issued in September on the property of the state railroads; 100,000,000 francs which constituted the stock capital to the Crédit National which was subscribed by the leading banks of the country for the purpose of extending credit to merchants and manufacturers especially in the liberated regions; 4,000,000,000 francs issued in December, bearing 5 per cent. The total on Dec. 13, 1919, was as follows:

	Francs
Pre-war consolidated debt	32,241,692,000
Debt contracted during the war:	
Consolidated debt	73,116,641,815
Term debt	19,516,165,000
Floating debt	64,689,746,000
Bank advances (also largely war debt)	25,835,000,000
Total	215,999,244,815

The above classification of the debt does not distinguish between external and internal items. The external debt separately stated increased during the year 1919 from 27,292,000,000 francs to 33,861,000,000 francs. Such was the situation at the beginning of 1920. The government was then trying in various ways to increase revenues and introducing several novelties. One of these was the so-called bachelor tax, requiring payment of an extra 10 per cent by unmarried persons of both sexes subject to the income tax. Another new tax was the business transfer tax.

THE BUDGET. In May the ordinary budget was placed at 21,700,000,000 francs. There was much anxiety in respect to the budget for 1921, which in spite of the government's promises of prompt action was long delayed. On September 17, the finance committee met to receive the government proposals, but the plans of only four ministries were at that time ready. October 15 was fixed for the date but it was then put off. At the first meeting under the presidency of M. Millerand, the finance minister, M. François-Marsal, had brought the matter up, showing the necessity for cutting down the estimates so that it should not exceed the budget of 1920. The ministers concerned, however, did not counsel this reduction and it was decided to appoint the President, M. Millerand, as arbiter. In October, accordingly, he held conferences with the respective ministers. In November it was reported that the new budget would come to 26,000,000,000 francs.

RATE OF EXCHANGE. The great increase in rate of exchange dates from March 12, 1919, when there was a sudden inflation. This was followed by a slow increase for a short time, but a steady and rapid augmentation continued throughout the year 1919. This movement lasted till April 12, 1920, when the pound sterling stood at 67.45 francs and the dollar at 16.97 francs. On the following day it began to decline from this culminating point and it fell more or less regularly for several months. Toward the close of the year it declined again. Near the end of October the franc was worth 6.35 cents in American currency and on December 31, 5.92 cents.

FINANCIAL SITUATION IN THE AUTUMN. Efforts were being made to reduce expenses in concert with a commission of inquiry, which had been in session during the summer. Measures had been taken to improve the yield from the former taxes and to create new sources. It was estimated that the return from the former taxation for the year would exceed the budget estimates by 4,000,000,000. As to the tax on war profits, the government was contenting itself for the present with declarations of the interested parties as to the amount of their taxable property, but measures of control would be taken. Among the new sources were the increase of the customs duties on a large number of articles and the increase of taxes and the imposition of new taxes under the law of June 25, which would yield 8,500,000,000. It was expected that the ordinary budget of 1920 (21,700,000,000 francs) would be made to balance and even yield a surplus. The advances to Germany for the purpose of enabling her to proceed to the payment of the reparations had to be taken into account as did also the debts between the Allies. Measures

had already been taken for the reimbursement of the \$250,000,000 which constituted the French portion of the Franco-British loan issued in the United States in 1915, and the government would not fail to meet its obligations on the date fixed, namely October 14. The total public debt had been estimated in July at 235,739,000,000. In respect to the floating debt and the paper currency which greatly complicated the French financial situation it was evident that a progressive reduction was required. The means for its execution were on the one hand the reimbursement of the Bank of France, which would begin before the close of the year and which, pursued from year to year, would cause the gradual reabsorption of the excess circulation, and on the other hand successive loans which would hasten the movement. At the same time the floating debt would be consolidated. The Millerand ministry on coming to power had succeeded to the loan arranged for by its predecessor. (See below). It was necessary to proceed at once to place it for it had already been delayed a year. It was necessary in order to consolidate the greater part of the floating debt. The following account of financial conditions was given out by the government on the occasion of the opening of the new 6 per cent loan toward the end of October: Since the beginning of the year, the French government had ceased borrowing from the Bank of France. It could also be said that the inflation had not only ceased, but had begun to diminish. The government expected to pay back to the Bank of France at the beginning of the following year 3,000,000,000 francs. This would reduce the debt of the government to the Bank from 26,000,000,000 to 23,000,000,000 francs. Since the advances from the Bank of France had ceased, the work of paying or consolidating the foreign debt had been going on. The negotiations for the reimbursement of the Anglo-French loan by the United States (\$500,000,000) had been completed. Three-fifths of the French part of the loan (i.e. \$150,000,000) had been paid October 14, and the payment of the rest was provided for by long-term loan. The state treasury had been disorganized by excessive expenses. The state when in control of industry was inefficient and while that control had been necessary in war time, it should be brought to an end as soon as possible. Measures had been taken toward the return to normal conditions and various services had been suppressed. As to the money due from Germany, the government would not abandon any of its claims and Germany must pay without regard to her financial condition. A financial crisis, no matter how acute it was, did not destroy the productive force of a country and Germany still possessed the wealth of her own soil which had not been destroyed by the war. She had especially rich resources in coal, wood, and potash, and her manual labor was much less reduced than that of France. The ordinary budget comprising all permanent and normal charges would be supplied by means of taxation. All sums due the treasury would be collected so far as possible and an effort would be made to apply the laws more vigorously in respect to those contributions which were not yielding all that had been expected. Thus, for the extraordinary contribution of war profits, there had been received only

4,100,000,000 francs during the last three years of the application of the laws. The returns now amounted to 9,878,000,000, thus doubling in nine months the production of three years. Certain new taxes had been voted. France before the war had paid less than 5,000,000,000 francs in taxation, but henceforth would pay nearly 20,000,000,000. This had resulted from an appeal to the contributive forces of the country. In this the government had respected so far as possible the traditions, habits, and even prejudices of the country, which was always jealous of fiscal interference in private business. All the taxes which bore upon the general activity of the country showed a constant increase, thus indicating the return of normal conditions of business. On June 20, these increases had amounted to 1,634,674,200 francs which was 43 per cent of the budget valuation. In short, France's financial restoration kept pace with her economic restoration. In these respects the country had passed the period of its greatest anxiety and better times were indicated. For the future it would be necessary to put a limit on the increase of the short-term debt and not to increase the issue of Treasury bonds, but to consolidate and amortize those already in circulation. These were the main points of the future policy in respect to that matter. Other features were the reduction of expenses and the suppression of various services applicable only to war time. The extraordinary budget was not admissible unless the ordinary budget was provided with the means of settlement; but it should be limited to expenses incident to placing in operation the productive forces of France and her colonial empire.

The necessary sum for covering annual expenses of the government amounted to 18,500,000,000 francs, which was about three and one-half times the annual expenditure of the period before the war. This included the liquidation of all war expenses and the service of loans, but would not apply to pensions and to the cost of reconstructing the devastated regions since those expenses according to the Treaty were to be paid by Germany. Half of this sum was to go to the payment of the interest on war loans contracted by France. The whole of the 18,500,000,000 francs was entirely covered by the new taxes voted by parliament. More than that, these taxes furnished a surplus of 3,500,000,000, for their total return was estimated at 22,000,000,000. As proof of the excess that these taxes would yield, the following points were presented: During the first quarter of 1920, the excess of the budget over that of last year was 1,900,000,000 francs and this came simply from the indirect taxes. There would be in addition for the entire year about 4,000,000,000 which would not come from the new taxes, but from the development of commerce and industry. This latter amount represented about four-fifths of the total budget collections before the war. Moreover, the taxes on war profits for the four years 1916-19, inclusive, amounted to 4,000,000,000 francs. These points were cited by way of refutation of the pessimistic remarks circulated in foreign countries in regard to the financial situation of France and were presented as an answer to the frequent criticism that France had not financially placed her house in order—in short, that she was looking too much for outside aid and not helping herself enough.

Before the war France was paying in taxes only about 108 francs or \$20 a head each year: she was paying in November, 1920, 420 francs a head. The income tax as applied in France was reported to be pressing three times as heavily upon the French taxpayer, as the American tax upon the American taxpayer. As to the resources of France, she not only had the fertile land and mining resources of France itself, but there were the potash and iron deposits of Alsace and the Briey basin and her enormous colonial empire extending over an area greater than that of the United States with Alaska added, and including Africa, with its rich resources of wheat, wine, fruits, vegetables, cattle, hides, olive oil, petroleum, ivory, cotton, etc.; French Indo-China, with its rice and rubber and the inexhaustible resources, tea, cattle, coal, and other minerals to say nothing of the products of her island colonies.

THE NEW LOAN. Subscriptions to the new French 6 per cent loan were open in October and November. It was announced, December 2, that it had succeeded far beyond expectations, the total subscriptions being over 30,000,000,000 francs, or at the normal rate of exchange, \$6,000,000,000. The result occasioned surprise in view of the business depression prevailing in the country as the result of difficulties in adjusting retail prices to the lowering prices of raw materials.

RETURN FROM TAXATION, ETC. The yield for the calendar year 1920 from indirect taxes and monopolies was placed at 12,059,203,800 francs, an increase of 1,674,162,710 francs over the budget estimates. In addition to this the liquidation of French and American stocks yielded 1,649,572,100 francs and the Treasury had received 728,019,200 francs as revenue from the public domain and from other sources. The ultimate product of direct taxes was placed at 1,763,629,200 francs, of which on December 31st, 858,865,000 francs had been collected. The ultimate product of the general income tax and the *impôts cédulaires* was placed at 1,288,505,700 francs, of which 1,007,065,400 francs were applicable to the year 1920, the last-named sum being composed as follows: General income tax 587,337,700 francs; tax on commercial and industrial profits 331,632,500; salaries and wages 67,667,600 francs; profits of the liberal professions 12,065,500 francs; and agricultural profits 8,362,100 francs.

UNITED STATES AND FRANCE. The question whether the United States should supply financial aid was the subject of much debate throughout the year. The following summary indicates the French point of view: It was true that France was under deep obligations to the United States for her generous support during the war. Nevertheless, France felt that she could count upon further assistance in view of her economic condition. Certain objections were raised in America. For example, in the financial world, France was criticized for having a fiduciary circulation of more than 35,000,000,000 francs. To this the answer of the French was that while it was true, fully 20,000,000,000 francs of this amount had been applied to the liberated regions in default of the payment by Germany of the amount she ought to have paid. Moreover what better proof could there be of the financial sacrifices to which the French nation had consented than the increase of the French budget from 5,000,-

000,000 francs in 1914 to 12,000,000,000 francs at the end of the war, and to 21,700,000,000 in May, 1920. The Americans seemed not to realize the inexhaustible natural wealth of France: The vast deposits of iron for example in the basin of Lorraine; the enormous potash resources of Alsace; the phosphates of Algeria; the water power of the Alps and the Pyrenees; to say nothing of the great fertility of the French soil. These resources had not been exploited and this was due neither to the fault of the French nor to their lack of energy, but only to the wretched condition in which the Germans had left the invaded regions. The factories and industries of entire departments had been destroyed. In view of the incomparable riches of France it was asked what risk there was for American capital. All that France needed was time in which to repair her ruin. As to the rate of exchange, while the enormous appreciation of the dollar was disastrous for the French, it was likely to become a danger also to the Americans. It imposed an economic barrier which in the long run might close the French market to imports. For example, certain French manufacturers in order to escape the losses involved in the high rate of exchange had caused millions of tons of sugar to be purchased in Czecho-Slovakia and it was not unlikely that France would draw extensively on the food supplies in certain regions of central Europe to the injury of the American market. The success of the recent loan would no doubt show that America was not lacking in good-will. France appealed not only to American good-will, but to American self-interest. See below under *History*.

FINANCE. Reports published toward the end of the year indicated bad financial conditions and widespread anxiety over the state of the public treasury. In spite of the success of the national loan, the exchange situation had not improved and business conditions appeared to be growing worse. There was an excessive restriction of credits resulting in a serious stagnation in industrial enterprise. Various rumors were afloat as to the proceeds of the loan. It was said for example, that a large part of them had been already spent in advance. In Parliament the government was closely questioned and the finance commission of the Senate indicated that the budget estimates as yet not made public did not show the complete indebtedness and that supplementary estimates would follow. The finance minister offered an explanation of the conditions and agreed henceforth to take Parliament into the complete confidence of the government, in regard to expenditures and the way to meet them.

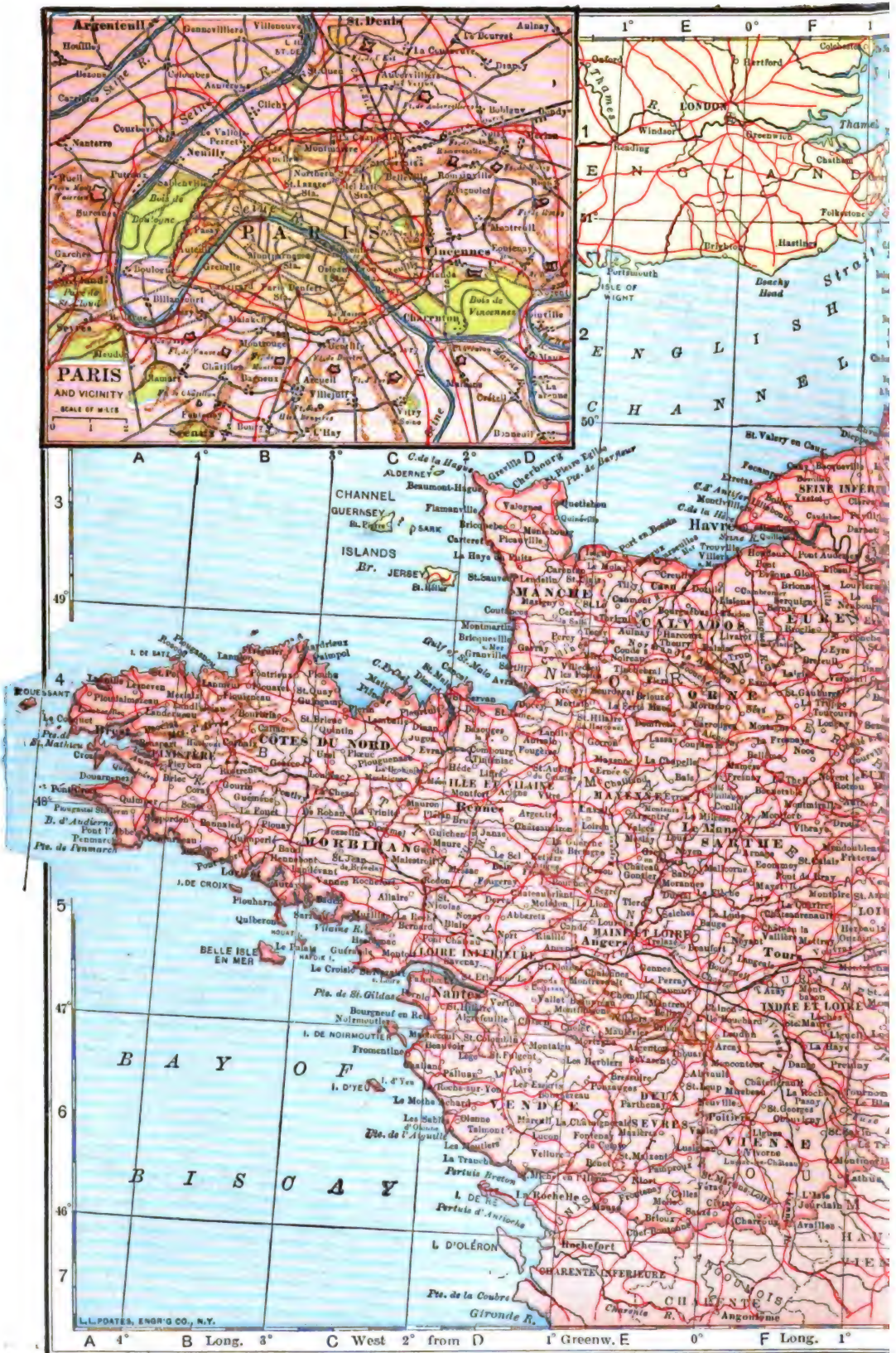
At that time it was reported that the French were sending to Washington the sum of \$150,000,000 in payment for its share of the Anglo-French loan by the United States.

RAILWAYS. The railways of France, which had in 1920 an aggregate mileage of about 26,500 miles were included in seven systems, five of which, the Paris-Orleans, the Paris, Lyons and Mediterranean, the Nord, the Est, and the Midi, were privately owned and operated. These private companies functioned under state concessions which expire between 1950 and 1960, when, under the terms of the concessions, the railways will be turned back to the state. The state system, founded in 1878, was formed out of the older lines and was extended in 1908 by the re-

purchase of the Ouest railway which had a mileage of about 3700 miles. The Alsace-Lorraine system turned over to France after the war was also operated by the state.

Inasmuch as France was the battleground for much of the World War, it was inevitable that in addition to problems common to transportation interests the world over, it should have its own and special complex situation. The outbreak of war in 1914 had found the French railways in good condition, and during the period of hostilities they were operated with considerable efficiency. However along with certain manifest strategic advantages among which was the convergency on Paris certain disadvantages were clearly apparent, chief of which were the inability to handle cross country traffic and the great independence of the different lines with each other. In France as elsewhere in 1920 the leading considerations with the railways were finances and labor. The war and its aftermath had affected both, and in particular operating expenses had increased far more than revenues. In 1919 operating expenses were 461,902,000 francs, or 225 per cent greater than in 1913, due not only to increased labor costs, but to the increase in the cost of fuel. This item alone had grown tenfold on account of the high price of imported coal which was consumed in much greater quantities than the French fuel. Increases in transportation rates were made at the beginning of 1918 to the amount of 25 per cent, and in 1920 to 70 and 80 per cent for passengers and 140 per cent for freight, but these advances only increased the receipts 89 per cent or 302,000,000 francs. At the same time the operating ratio rose from and average of 57 per cent in 1913 to 103 per cent in 1919. These conditions were destructive of any operating surpluses such as the three principal privately operated lines—the Paris, Lyons and Mediterranean, the Est, and the Nord—were able to record in 1913, when the excess of earnings over expenditures amounted to 8,000,000 francs, 7,308,000 francs, and 7,000,000 francs respectively. Subsequent to 1914 each of these roads had a deficit and the deficits of the other railroads increased. At the end of the financial year 1919 the total deficit for all of the railroads was 2,500,000,000 francs and it was estimated that the deficit for 1920 would almost approach that sum, making a total deficit of 4,500,000,000 francs. For the year 1920 an operating ratio of about 125 per cent was estimated.

With such deficits on the operating account in order to pay the shareholders of the railways the minimum guaranteed dividends, the Est, the Paris-Orleans, and the Midi received advances from the state. The state guarantee to the Nord and the Paris, Lyons and Mediterranean systems ceased after 1915, but they were authorized to borrow money in order to meet these dividends. This privilege, however, expired with the financial year 1920. Such conditions naturally called for some remedial measures and on May 18, 1920, the President of the Republic signed a bill for the reorganization of the railways in order to stop the financial drain due to the guaranty of minimum profits. The bill provided that the various lines should be coördinated so as to form a great national system. At first, the railways were to be operated by their existing managements, but subject to a council on which the companies, the men, and the users of the railways would be



represented. All the net receipts were to be pooled. From net earnings in excess of the sums guaranteed the companies there would be paid premiums to those which did well in the amount and operation of traffic; two-thirds of these premiums were to be divided among the employees. This arrangement involved certain additional measures concerning the employees referred to below.

By French railway officials at least, and also by many economists the eight-hour day was held responsible for much of the financial trouble prevalent in 1919 and 1920. It was established by a law taking effect April 23, 1919, even before the railways had been able to reorganize and adjust their operating conditions and forces on a peace basis. The first direct result of this action was to increase the number of employees to an extraordinary degree, and with increase in numbers went a more than corresponding diminished efficiency. From 1914 to 1919 there was an increase of from 25 to 32 per cent in the number of station employees, from 30 to 37 per cent in trainmen, and in excess of 40 per cent in engineers and trainmen. Where at the beginning of 1914 there were 355,900 railway employees, and in 1919 391,400, by 1920 the total had reached 500,000. Even under normal conditions such increases would mean many inexperienced men, and this of course was intensified on account of the post-war situation and resulted in decreased output and lessened efficiency. On one system where there had been an increase in the number of locomotive engineers amounting to 40 per cent on account of the eight hour day the daily average run had fallen from 67 miles in 1913 to about 40 miles at the beginning of 1920, while in the shops with the eight-hour day and the elimination of piece work the hourly output had shrunk to 50 per cent of what was secured before and the number of workmen had to be increased. According to French railway officials the eight-hour day had resulted in reducing the number of available freight cars, increased the number of losses, delays, and damages, and seriously retarded the return to normal operation. The effect on wages was to increase the amount from that paid to 355,000 men in 1913, 766,800,000 francs, to 3,276,000,000 francs paid to 500,000 employees in 1920, or an increase of 327 per cent in wages for a working force increased about 41 per cent.

Naturally rolling stock and other equipment suffered during the war, but in 1919 and 1920 the great trouble was an insufficient and inexperienced force in the shops to maintain locomotives as well as engineers and firemen to operate them. From an ante-war record of 9.8 per cent of locomotives out of service for repairs, the proportion increased to 20.5 per cent on Aug. 1, 1919, and was 22.4 per cent on Jan. 1, 1920. In the case of freight cars the condition was even worse, out-of-service cars increasing from 3.7 per cent to 15.7 per cent on Aug. 1, 1919, and 18.6 per cent on Jan. 1, 1920. In the last year practically double the number of men were required for the same amount of work as before the war.

Much reconstruction work was done on the French railways in the devastated territory in 1919 and 1920. A large part of the lines on the Nord and Est railways required entire rebuilding. The notable record of 1353 miles of 1407 destroyed put back in service in 20 months

was a distinct achievement for the French railway engineers. As a result of this effort and activity, transportation in devastated regions was practically restored to normal by the autumn of 1920. Furthermore French engineers were not only thinking of present needs for reconstruction. Electrification was receiving their earnest attention. In accordance with a law passed in 1919 to develop and regulate the use of hydro-electric power, sites for various generating stations were granted to the Paris-Orleans lines, while subsequently legislative provision was made for the development of hydro-electric plants on the Rhine River. In fact, electrification was planned for some 6000 miles of track distributed as follows: Paris-Orleans, 3250 miles; the Midi, 2125 miles; and the Paris, Lyons, and Mediterranean, 1525 miles. Naturally such a programme of electrification involved a capital outlay of several billions of francs, but the corresponding annual saving of 1,500,000 tons of coal which would be available for industrial purposes, not to speak of the improved traffic conditions and economies of operation. Just how this capital outlay would be financed was not announced in 1920. A committee on standardization adopted for future use direct current at 1500 volts as standard practice.

Two serious strikes on the French railways were notable and deplorable events of 1920. A four-day strike in February was followed by a more serious outbreak in May lasting 28 days and working untold damage. The May strike was stated to be a revolutionary movement, duly prepared for and supported by external agencies, though conducted by the Railwaymen's Federation, of which more than half of the workmen were members. The strike was in defiance of public opinion, and was dealt with rigorously by the government, aided by many loyal employees and volunteer workers enlisted from schools and universities as well as from many other walks of civil life. The federation was duly defeated and more or less disorganized but the damage done not only to the railways but to industrial life generally was unfathomable. The estimated loss to the railways was 140,000,000 francs and its effects were spread over several months. However it served to define the attitude of the general public toward such labor manifestations and the railways emerged in a better position. Previous to the strike there had been an important series of agreements between railway officials and the employees seeking to secure increased interest and cooperation from the workers who often were able to contribute suggestions of practical importance and benefit to the service. Furthermore these agreements provided for safeguarding the employees' interests in regard to promotion, increased wages, discipline, and enforcement of reasonable though strict regulations. The plan in substance was that the workmen should elect delegates to three committees. One committee was to represent the men at local points, the second committee was to confer with the general manager and a third committee was to confer with the presidents of the roads. The presidential committee consisted of 24 members, 7 from the transportation department, 7 representing the mechanical department, 7 representatives from the engineering department, and representatives from other departments.

It was provided that the general manager's committee should confer with the general man-

ager every three months and the presidential committee should confer with the president every six months. These committees were also to join with any inquiry board called to give its opinion on questions of discipline. The plan further provided for the representation of the employees on committees formed to consider employees' pensions and for the inspection of the coöperative stores. The workmen thus were able to participate in a very practical way in the management of the railways.

As a result of the agreement wages were standardized so that all employees of the larger railways belonging to the same class of service were to be paid alike. Length of service and yearly bonuses also were established.

ARMY. Figures supplied in 1920 showing the French forces engaged in the war and the estimates of casualties, etc., were as follows: The total number of white troops mobilized during the war was placed at 7,935,000 and of native troops of the colonies, 475,000. At the beginning of 1919, there were still about 2,300,000 French troops in service. Demobilization continued throughout 1919 and at the end of that year, the total strength of the active army including both white and colored troops was placed at about 800,000 of whom 150,000 constituted the army of occupation on the Rhine. This, however, did not include the forces engaged in Syria, Constantinople and the Balkans. The French colonies during the war furnished contingents of Senegalese, Algerians, Tunisians, Indo-Chinese, Moroccans, and other forces from the island of Malaga, Somaliland, and the French Pacific islands; and besides that, some 221,868 native workmen were supplied to take the place of Frenchmen engaged at the front, from Indo-China, Algeria, Tunis, Morocco, Madagascar, and China. The number of white troops killed during the war was placed at 1,390,600; of missing, believed to be killed, 245,900; wounded, 2,560,000. The number of native casualties was placed at 67,000 killed and 140,000 wounded.

According to figures in the possession of the United States War Department the army of France was, so far as effectives were concerned, the largest in the world, although it was surpassed by the Italian army when the reserves were reckoned in. The permanent French effectives December 31st were placed at 732,000, including colonial troops; the reserves at 1,560,000.

At the beginning of 1920, the question whether universal compulsory military service would be retained, was still unanswered and it remained under consideration during the year. Plans had been proposed for a conscription of 200,000 each year and the addition of 150,000 by voluntary enlistment, which would constitute an army on a peace footing of 350,000 and on a war footing of 1,300,000. A territorial and reserve force was also proposed which would give about 2,000,000. On February 22d the government at the request of the general staff, gave its permission for the maintenance of 1,000,000 men under arms, instead of 800,000, and the continuance of all supply departments on an emergency war footing. The war pensions had been liquidated, according to the Minister of Pensions, on February 1st, to the number of 660,000, but at that time there remained nearly five times as many to be settled. Of these, 1,975,000 were for disabled persons, 700,000 for widows, and 550,000 for dependents.

The question of the length of military service was under discussion in the latter part of the year. In October the War Minister, M. Lefevre, submitted his recruiting bill to the army committee. This was drawn up by the aid of the general staff and approved by the superior council of war. Those who supported it believed that the necessity of possessing an army sufficient to insure the peace during the period of the execution of the treaties required the maintenance of a large number of effectives. After that period, the three-year service might be given up but it should not fall below the two-year limit. The total duration of military service, according to the law of Aug. 7, 1913, terminated in the 28th year. According to the new plan it was prolonged to the 30th year. One-half of the recruits were to enter in the month of October of the year in which they reached the age of 20; the other half, six months later, in the month of April of the year when they reached the age of 21. The army consisted of the active forces with service for two years, the reserve with service for 18 years, and the territorial force with service for 10 years.

At the close of the year the future of the French army was still unsettled. The term of military service was not fixed for the regular army, nor was the period of training for the reserves. Various bills had been presented in the Chamber concerning the re-organization of the army, recruiting, and the term of military service. Competent military authorities declared that it was not possible to reduce the term of service to a year. The Minister of War, M. André Lefèvre, had opposed even the reduction to 18 months which had been finally agreed upon by the ministry, and had resigned in consequence of this disagreement, as noted below under *History*. At the close of the year, a government bill which embodied the principle of 18 months' service was still before the Chamber. The question of re-organizing the army and of replenishing the munitions, etc., was particularly important in view of the part France was playing in the East. In Syria and Cilicia her forces were serving virtually as police. General Gouraud who was in command estimated that for 1921 the sum of 1,200,000,000 francs would be necessary for the region, including 400,000,000 for the civil administration and 800,000,000 for the military. This amount seemed excessive to many critics, but the Prime Minister and General Gouraud still insisted on the necessity of this credit. It was argued on behalf of the French enterprise in the East that in the long run it would pay.

NAVY. The following table taken from the *Statesman's Year Book* for 1920, shows the number of vessels in the French fleet including those projected or in process of construction.

	Complete at the end of		
	1918	1919	1920
Dreadnoughts	7	7	7
Pre-dreadnought battleships ..	17	13	10
Armored cruisers	17	15	15
Protected cruisers	10	18	12
Gunboats, etc.	11	35	35
Destroyers	85	80	80
Torpedo boats	160	153	100 (?)
Submarines	100	100 (?)	104 (?)

See **NAVAL PROGRESS.**

France, like other great Powers, was concerned with the question whether the navy of the future should depend for its strength upon cruisers or submarines, and the matter was largely discussed

in 1920. England had not undertaken any construction and therefore had not decided the question. The other two great naval Powers, the United States and Japan, appeared to have decided for cruisers, and had projected superdreadnoughts and giant battleships of 40,000 tons. The French naval department, however, at the close of the year seemed to decide on the opposite policy, for it planned to build 100 submarines. The entire administration of the navy including the ministry, general staff, and superior council of the budget had agreed that, without condemning the cruiser, the best policy for France on the sea called for a submarine programme.

GOVERNMENT. As a result of the elections for the Senate held January 7th, M. Bourgeois was elected president of the Senate by vote of 147 to 125. M. Clemenceau withdrew his candidacy for the presidency of the Republic, January 12, and in the election that followed, M. Deschanel received a large majority, namely, 734 votes as against 66 for M. Jonnart, 56 for M. Clemenceau, six for M. Bourgeois, and one for M. Sadoul. Thereupon, the Clemenceau ministry resigned and a new cabinet was formed under the premiership of M. Alexandre Millerand, who took the portfolio of Foreign Affairs. The other members of the ministry were as follows: M. L'Hopiteau, Minister of Justice; T. Steeg, Interior; André Lefèvre, War; Landry, Marine; Isaac, Commerce; J. H. Ricard, Agriculture; François-Marsal, Finance; Albert Sarraut, Colonies; Le Trocquer, Public Works; André Honnorat, Public Instruction; Paul Jourdain, Labor; Breton, Hygiene and Social Welfare; André Maginot, Pensions; Emile Ogier, Liberated Regions. Of these M. Jourdain and M. Le Trocquer had been in the previous ministry. Question was raised by M. Daudet as to the eligibility of M. Steeg, who had been accused of close relations with the exiled minister, M. Malvy, but his resolution demanding an explanation was rejected by vote of 383 to 14. A vote of confidence of the government followed, giving 272 against 23 (297 not voting). The question of confidence again arose, January 30th, when the Steeg question was revived, and the government received a vote of confidence of 510 to 70, and still again on February 6th, on the question of foreign policy, when the vote stood 518 to 68. The programme as announced by the government comprised as its main features: Coöperation, increased production, and pursuance of a vigorous foreign policy along the lines already laid down. M. Deschanel was succeeded as president in the Chamber by Raoul Peret. M. Millerand was elected to the presidency, September 23, and was succeeded as Premier by M. Georges Leygues. See under *History* below.

HISTORY

THE CAILLAUX CASE. The sensational trial of Joseph Caillaux which was so long a feature of recent French politics and which has been described in preceding YEAR BOOKS reached its final stage in February, when the case was opened before the High Court of the Senate. Most of the points brought out were already familiar to the public, having been discussed in previous trials and in the press. The main issue was whether he was guilty of intelligence with the enemy or of correspondence with the enemy. In spite of the many dramatic disclosures in previous trials, it was not believed that he was guilty of intelligence with the enemy. This was justifi-

fied by the result. The court by vote of 213 to 28, declared him not guilty of intelligence with the enemy: but decided, however, by vote of 159 to 91, that he was guilty of dangerous correspondence with the enemy, though without criminal intent, and by vote of 128 to 110 extenuating circumstances were admitted. He was sentenced simply to the term of imprisonment that he had already served, namely three years, but the sentence also carried five years prohibition of residence in French territory and the deprivation of civil rights for 10 years.

SOCIALIST PARTIES. The French Socialist groups in general stood firmly against the foreign policy of the government and the majority of them were also sympathetic with Bolshevism in Russia and with the German proletariat. A Socialist manifesto was issued late in March, condemning French intervention in Syria and expressing sympathy with the German working classes. The radicals had the upper hand at the beginning of the year, and their strength throughout the year seemed steadily to increase. A Socialist congress was held at Strassburg in March, at which the minority who favored the policy of national defense was expelled. Thereupon, the expelled members called themselves a new party professing the pure principles of Socialism and opposing Bolshevism. On May 1st, a Socialist manifesto set forth the following four demands upon the government: (1) Complete amnesty for all political offenses, mutinies, and disorders occurring in strikes; (2) right of all state employees to form unions; (3) peace with the Soviet government of Russia; and (4) general disarmament. On May 2d, the General Confederation of Labor, which had defied the government's attempt to break it up, put forth a programme which made the following demands: An international association for the distribution of raw materials; an international fleet to be formed under the League of Nations to determine freight rates and permit the provisioning of countries according to the needs and the conditions of the market; the control and distribution of imports; and the elimination of the middleman. A further account of the activities of the French Socialists during the year will be found in the article **SOCIALISM**.

There were labor disturbances, more or less serious all through the year, owing to the effects of the war in general and specifically to the high cost of living. A general strike was ordered by the Confederation of Labor after a serious railway strike had been called out (February 24th) by the national federation of railway workmen, and in the middle of March, some 400,000 workers employed in mills, mines, and factories were involved. The government followed the example which M. Briand had made famous several years before the war during the great railway strike. It called the railway strikers to the colors and at the same time promised to remove just grievances. Its course was approved by the Chamber of Deputies by a vote of 503 to 75. The railwaymen in the national congress which opened in Paris, April 24, demanded nationalization of all lines, reinstatement of dismissed men, the right to form unions in all branches of railway work, and the abandonment of all proceedings against strikers. These demands were approved by a vote of 171,037 against 147,282. The General Confederation of Labor had come to their support, ordering out the seamen, dockers, and miners. The strike was unpopular and the company was

successful in maintaining the railway services in spite of it. The programme of the Confederation of Labor went much beyond the mere matter of wages or working hours. It called for the creation of a national committee to re-organize production and of an international arrangement for distributing raw materials and regulating freights; the re-organization of rail transport; control of imports; disarmament; cessation of colonial expeditions; an economic agreement among all peoples as a basis of coöperation. May Day was attended by its usual disturbances. It began peacefully, but a number of riots occurred and over 30 of the rioters were arrested.

NEW POLITICAL GROUPING. On June 17th an alliance of parties was announced under the title of Republican-Democratic Alliance of Social Action and National Reconstruction, which was said to control 260 votes in the Chamber and whose programme comprised the following features: Opposition to the dictatorship of any single class and substitution of class-solidarity for class-hatred; insistence upon hard work for the reconstruction of French economic life and upon the restoration of unity; abolition of the right to strike, except for specified reasons; and maintenance of law and order.

FRENCH RADICALISM. Some excitement was caused in conservative circles by an alleged international conspiracy between the directors of the General Confederation of Labor and the Socialists of France on the one hand with the extremists in England and the Committee of the International at Amsterdam on the other for the turning of France into a Bolshevik republic. In August the Socialist group in Parliament announced that they would interpellate the government in regard to the expulsion of the two English delegates and they demanded the calling of Parliament. This was at the time when the decision of the French government to recognize General Wrangel (see *WAR OF THE NATIONS*) was causing trouble with the English and an agreement on the matter between the two Allied governments had just been worked out. The Socialists tried to alarm the country over the danger of war. At this time the secretary-general of the Confederation of Labor set out for Amsterdam to attend the meeting of the International Bureau of Labor. The French General Confederation of Labor had urged the calling of this meeting in order to consider recent events in Poland. It was understood that the delegates to it would engage in the name of the workingmen of their respective nations to refuse to manufacture arms and munitions and to oppose any warlike venture by every means in their power, including the general strike. See *SOCIALISM*.

INTERNATIONALISM. There were in France representatives of liberal policies corresponding to those of the British Labor Party in England and the liberal elements in the United States that favored an international organization more radical in its scope than the existing League of Nations, but little publicity was given to these French groups in the foreign press, which quoted chiefly from sources committed to the support of the existing French government and to the most extreme immediate exactions from Germany. Such criticisms by French writers were mainly those from Socialist and Syndicalist quarters. In the course of the year a small group was formed which became known abroad chiefly on account of its literary origin. It was founded by

M. Barbusse, author of the remarkable novel, *Le feu*, translated into English under the title of *Under Fire*. This organization was termed *Clarté* from the title of a later book by M. Barbusse in which his ideas on international policies were presented more definitely. A number of well-known men joined the organization which carried on an active propaganda. The main point in its programme corresponded to the principal thesis of M. Barbusse's second book, namely, that war was not to be attributed to the wickedness of any one country—that all countries and not Germany alone were to blame for the late war, that the principal cause of the war was to be found in the spirit of nationalism, in the selfishness and narrow patriotism characteristic of all nations, that in a sense all governments had been guilty in 1914–18, for while Germany was the immediate offender at that time, every government had done similar things in the past. Therefore in order to put an end to war it was necessary to consolidate the peoples of the world. The principles of the new group involved extremely radical changes of a social as well as an international character. By the press generally, this movement was condemned on account of its immediate bearing on the question of Germany. It whitewashed the Germans, according to its critics, relieving them from all punishment and reparation and so encouraged them to begin again. It greatly offended a large part of the public, by accusing the French government of the same imperialism as Germany had shown. Documents were circulated by the group to prove that the war itself was not exclusively due to the Germans. In short, the issue which it raised was the familiar one of pacificism. The radical and logical endeavor to assure peace in the future involved its authors in a criticism of their own country, which was immediately seized upon as proof of their disloyalty; so the issue was between treason to their own country and allegiance to a dogma of universal peace. Practically the movement was believed to be of no importance, but on its theoretical side, it gave rise to animated discussion.

KAMERUN AND TOGO. The status of the former German colonies Kamerun and Togo was a vexed question during 1920. Points brought out in the course of discussion with the minister of the colonies were as follows: Article 119 of the Treaty provided for German renunciation of these colonies and article 22 laid down the principles which should guide the nations that assumed control of them. The distribution of mandates was decided by the Supreme Council of the Allies. All the German colonies with the exception of the two mentioned above passed under the mandate of the British Empire, Australia, and New Zealand, Japan, and the Union of South Africa, and the Council decided that France and Great Britain should come to an agreement. France and England agreed upon a geographical partition of the territories they had conquered. That was the situation down to the closing months of 1919. An agreement was reached between the French and English authorities both central and local and the process of evacuation and of taking possession began in 1920. In the French territories the organization of the government was also begun. Councils of administration, courts, and a financial system were provided for. The customs system of Kamerun was the subject of special decree which fixed the

rights of entry and clearance according to the principles of the decree in respect to French Equatorial Africa passed in 1912. Another decree arranged for the liquidation of German property in the two colonies. An important decision was reached on Dec. 9, 1919, by the Supreme Council giving France the right to recruit troops in the country not only for local defense but if necessary for service in France. As to the question whether the colonies were to be governed under a mandate or on the principle of territorial sovereignty, the Minister of the Colonies said that the point was still undecided. A decision of the Supreme Council on May 7th which had been applied to the Kamerun and Togo, left the impression that the territories were to go to France without mandate, but France intended to administer them in the spirit of a mandatory power. France entered into full possession of the Kamerun and Togo, October 20. The question of status remained unsettled, the precise meaning of the term mandate being subject to debate. It was interpreted by some as admitting virtual annexation.

OFFICIAL RELATIONS WITH GERMANY. A German ambassador for the first time since 1914 presented his credentials to the President of the French Republic September 29th. The new ambassador, Dr. von Mayer, declared that he would do all in his power to bring about friendly relations on the bases established by the Treaty, and President Millerand replied to the effect that the policy of his government was based on the belief that the only means of removing difficulties in the way of good relations between the two countries was the loyal execution of the Treaty. Upon the ambassador's first official visit to the government he repeated his assurances that Germany would act in good faith and the French Prime Minister replied that all that the French government desired was certainty that the German government would fulfill its obligations. Once that was assured, France would do all in her power to establish normal political and economic relations with Germany.

NEW PRESIDENTS. There were two presidential elections during the year. On the retirement of M. Poincaré in January the two leading candidates were M. Clemenceau and M. Paul Deschanel, but in the preliminary meeting M. Deschanel received 409 votes against 389 for M. Clemenceau and the latter withdrew his candidacy, January 16. M. Deschanel was elected, January 17, by 734 votes out of 888 recorded. President Deschanel began to show signs of illness in the spring and fell or jumped from his special train as it was approaching Hontargis in the night of May 23d. He suffered from serious nervous disorder, but from time to time was reported cured. His malady increased, however, and after varying reports on the subject in the newspapers it was announced on September 16th that he had placed his resignation in the hands of the council of ministers. The leading candidate for succession was M. Alexandre Millerand, the Premier. The election was held, September 23. The platform on which M. Millerand accepted the nomination contained the stipulation that there should be no marked change in national policy, that is to say, no compromise in respect to the revision of the Treaty, etc. The final result was 695 votes for M. Millerand, out of a total of 892.

THE LEYGUES MINISTRY. The appointment of Georges Leygues as Prime Minister was announced September 24th and taken as an assur-

ance that the Millerand policies would be carried out. The new ministry was promptly appointed and the Chamber of Deputies passed a vote of confidence of 507 to 80. The principal points in the new Prime Minister's announcement were the continuation of the present French foreign policy and the necessity of revising the constitution. Other points were the reconstruction of the devastated regions and the guarding of the rights of new nations. On December 16th, the Minister of War, M. André Lefèvre, resigned on account of his opposition to the military service bill which fixed the term at 18 months in place of two years as he demanded. In his letter of resignation, he deplored the difference of opinion between him and other members of the cabinet in respect to French policy toward Germany and the dangers that France incurred on account of the attitude of Germany. France was under the necessity of defending herself from an attack through Poland, Czecho-Slovakia, and Roumania, and the danger in that quarter was increasing. M. Lefèvre was succeeded at the close of the year as Minister of War by Baron Flaminius Raiberti, who had been for a long time a member of the Democratic Left in the Chamber, where he had specialized in military questions and served for a number of years on the committee of the army.

THE POLICY OF MILLERAND. The election of M. Millerand as president after the resignation of President Deschanel in September was regarded as a definite endorsement of his policy. The main points in his policy may be summarized as follows: He had worked from the first for the strict fulfillment of the Treaty. Upon the appearance of German troops in the Ruhr Valley, he at once sent French generals to occupy German towns on the Rhine and in so doing did not await the approval of Great Britain. At the conference of San Remo, he argued with success for the strict enforcement of the Treaty and won over the British and Italian Prime Ministers to his point of view. At the conference of Spa, he maintained a vigorous attitude which brought the Germans to terms. In respect to Russia, he believed in the first place that the Soviet government aimed at a world revolution which might finally involve France and in the second place he feared that it would work with the old military element in Germany to restore that Power. Moreover, as the Bolshevik government had officially refused to recognize the debt to France of the old régime, France must oppose any negotiations which would lead to the recognition of that government. It has been and must continue to be the policy of France according to M. Millerand and his supporters to do everything possible toward the overthrow of the Soviet government. This attitude toward Russia accounted for the absence of French representatives from the trade and peace negotiations with Russia undertaken by Lloyd George, and the sudden recognition by France of General Wrangel in South Russia. It also accounted for French policy in respect to Poland, which country was supported by all possible means as the rampart against the Russians. When M. Millerand accepted the candidacy for president, it was on the condition that he should be allowed to supervise the foreign policy of the ministry, so that it might follow along the lines that he had laid down. Concerning the French government's attitude toward Poland, its recognition of General Wrangel, and its general policy

at the various councils during the year, see **WAR OF THE NATIONS**.

QUESTION OF REPARATIONS. There was a sharp division in policy between the French government and the other Powers in respect to both the amount of the reparations from Germany and the definite fixing of that amount. For an account of this friction which as between France and Great Britain was especially serious, see the article **WAR OF THE NATIONS**. In general, France held to a strict execution of the Treaty without regard to Germany's ability to pay and was opposed to fixing at an early date the exact amount to be paid. The French government repeatedly maintained that it was not asking Germany to pay more than she was capable of paying and that the immediate fixing of the amount was premature. It argued that France was unable to meet the necessities of the devastated regions and reconstruct the financial and industrial systems of the country without the payment of the reparation money. The attitude of Great Britain on this subject occasioned distrust and provoked hostile criticism. The friction between the French and British governments was aggravated by the decision of the latter not to seize German property under certain conditions. This was condemned by the French press as encouraging Germany to press for further changes in the Treaty and because it placed British trade in an advantageous condition as compared with the trade of her Allies. By removing the threat of confiscation, it deprived the Allies of a sanction for the enforcement of the claims against Germany. As the year went on France showed a tendency to conform more nearly to the policies of her Allies and there were repeated conferences on the subject, but down to the year's close the question was still unsettled and the amount of reparations had not been fixed. See **WAR OF THE NATIONS**.

THE QUESTION OF PLEBISCITES. The conclusion of the Riga armistice left France without immediate subject of anxiety in respect to Poland and, according to the government's supporters, had entirely vindicated the policy of M. Millebrand in respect to Poland but meanwhile, they said, Germany was as usual giving cause for concern. They declared that the Pan-Germans were continuing systematically their underhand work in Upper Silesia and were trying by every means to falsify the future plebiscite; that they had devised a plan for associating about 300,000 Germans from regions outside the territory in question; they they were trying equally to confuse the minds of the electors by bringing up the question of self-government, whereas the only point at issue according to the Treaty was to be the question whether the country should be attached to Germany or to Poland; finally that they were preparing to stir up riots and resort to force in case the vote turned against them. It was complained that while the Inter-Allied High Commission had taken all possible measures for assuring a fair vote the new English military attaché at Berlin, General Malcolm, had been won over by the Germans. In Vienna the National Assembly had voted unanimously for a plebiscite on the question of union with Germany. Austria, it was argued, was in fact dealing with the Treaty of Saint Germain in the same way that Germany was dealing with the Treaty of Versailles, that is to say she was seeking to evade its terms or delay its execution. By the former

Treaty the inalienable independence of Austria had been proclaimed.

THE NEAR-EASTERN POLICY. As noted above, under *Army*, the high estimates for the cost of maintaining French administration in the Near East were causing anxiety at the close of the year. On the one hand it was said that the policy was wasteful, while on the other it was urged that in the long run it would be profitable. The supporters of the government's policy argued that the cost of French occupation of Syria and Cilicia would soon diminish and the military authorities and the advocates of French expansion frankly expressed their satisfaction at the turn of affairs in Greece (see *GREECE, History*). That country had been a stumbling block to French foreign policy on account of Smyrna. The Turkish Nationalists under Kemal had harassed the French in their exasperation toward Greece. The French foreign office apparently wished to come to an understanding with the Turkish Nationalists and allow them to regain Smyrna, if they chose, for their hostility toward France in that case would cease and French troops would have no difficulty in maintaining order with greatly reduced forces. The Prime Minister, M. Leygues, had made it known after the action of Greece that he desired to revise the treaty of Sevres in that spirit and he spoke of an approaching agreement on the part of the Allies with Turkey. The insistence of Greece upon the recall of Constantine therefore had been a decided benefit to the supporters of the government's Eastern policy. It was argued that there was now no reason why the Greeks should remain at Smyrna. They had shown their political incapacity, and furthermore, the Allies were no longer under any obligation to them. Even among the friends of this policy, however, there was doubt as to whether the Christians of Smyrna ought to be placed under Mohammedan authority. See **WAR OF THE NATIONS**.

TREATY WITH CZECHO-SLOVAKIA. On November 4th the preliminary commercial treaty between France and Czecho-Slovakia was signed in Paris, providing for the reestablishment of freedom of trade so far as possible. It had in view the exchange of French products including phosphates, iron ore, and other raw material, for the glass and wood required in the devastated areas. It provided for direct shipment of Czecho-Slovak products to France by way of the Elbe River and also for through passenger service.

NEED OF FINANCIAL AID FROM THE UNITED STATES. On the occasion of the Financial Conference at Brussels, September 24-October 8, organized under the League of Nations (see **WAR OF THE NATIONS**), the French view of the situation and especially of the obligations of the United States was renewed with much emphasis in the press. The following résumé illustrates the spirit of French comment: A solution of the problem could not be had without both private initiative and government support or direction. In the first place moreover it was necessary that all of the countries concerned should accept the principle of international financial and economic unity in order that the wealth of one might offset the weakness of another. It was plain that Europe could not maintain an effective credit system without the support of the United States and eventually the participation of the other rich countries of America. It was argued

that the United States ought to lend her support, if for no other reason, because a financial disaster to Europe would certainly involve her. Unless means were found for restoring the economic equilibrium, Europe would undergo a crisis that would surely be felt in the new world. However, neither the United States nor the other nations represented at Brussels showed a willingness to take part in the measures that France and Belgium desired for their economic restoration. The remarks of the American delegate were discouraging on this point and occasioned much disappointment in France. But the newspaper commentators declared that France would put forth her full effort toward recovery nevertheless and some of them said that France would profit by the knowledge that the United States would not lend her any more money in that she would make all the more exertions on her own behalf. The French complained bitterly, however, that a misunderstanding had arisen from the fact that while the war is finished for the Americans it must continue for France so long as Germany has not fulfilled the obligations which she had incurred. The refusal to lend money to France, however, was not final. The American representative's remarks were interpreted as extremely favorable to the interests of Germany and as directed against the policy of France in respect to Germany. For example, he had congratulated the League of Nations on having invited to Brussels the representatives of Germany. In this he was said by the French to be blaming indirectly the conduct of France which had tried to exclude the Germans from the councils of the Allies. He said that the attitude of the American business men would change when the hostile feeling which prevailed between the different European states had disappeared. In this he was thought to be referring to the attitude of France. Again he said that when a struggle like this has ended it was the duty of the conquerors to meet their enemy more than half way. This was interpreted as meaning that France should hold out to Germany a hand of friendship. In an interview with the press he had remarked "Create the United States of Europe and everything will be settled." In short it seemed to the French that the American attitude was simply this: To get aid from America France must consent to revise the Treaty to the advantage of Germany, must renounce the largest part of the reparations due her, and must delay her own recovery in order to hasten that of her enemy. At that price American participation in the general work of reconstruction could be had. The French argued that the price was too high and the risk too great. The United States, it was said, were not disposed to forget what Europe owed them. France and Belgium on their side were not disposed to forget what Germany had done. French opinion could not understand why French credit in respect to Germany was any less inviolable than American credit in respect to Europe. France did not forget the sacrifices to which Clemenceau had consented in exchange for advantages that were not obtained. France did not demand a war indemnity but simply the reparation of great injuries inflicted without any military necessity and for the simple purpose of destroying her economic power after the war. The Germans should first be brought to recognize their debt and to give proof of their sincere intention to pay, then there might be talk of a reconciliation.

The French attacked vigorously all the ordinary arguments in everyday talk among Americans. For instance it was often said that after the Civil War the North and the South had become reconciled. To this the French said that the cases were not parallel for the North and South were not hereditary enemies during centuries. Again the simple remark that after a fight the contestants should shake hands and make up implied that the fight had been a loyal one. Here the case was entirely different for the one party had been attacked by the other and injury done and it was a matter of securing reparation for the injury. In short neither France nor Belgium could accept the above proposal. They could not forego the reparations provided for in the Treaty in exchange for vague promises. They could not relinquish their claim on Germany in return for a mere promise of a loan. Left to themselves they would at least be in a situation to hold their debtor to his agreement. Of course the period of reconstruction would be far longer and more painful but the French and Belgian peoples were willing to resign themselves in the inevitable and would put forth all the economic effort to which they were capable.

FRENCH FOREIGN POLICY. As is shown under **WAR OF THE NATIONS**, the conflicting ambitions and interests of the Allies against Germany gave rise to endless discussion in the press during the year. Unfortunately the writers having in view only the prepossessions of their respective publics were inclined to neglect the arguments of their opponents and to present only the aspects that were more attractive to themselves. Thus the long disputes often ran in parallel lines exhibiting hostile points of view but offering no serious basis for discussion. The following account of French foreign policy is taken from the writing of prominent French publicists, including the summary of French policy presented by President Millerand upon his assumption of office. The charge that the attitude of France was determined by imperialistic motives was dismissed as absurd. French policy aimed first at the strict execution of the Treaty. The Treaty had not given France by any means all that she had a right to claim. It was the result of compromise and of a strict working out with the Allied Powers whose interests had been duly considered of an agreement that should lead to an enduring peace. It was, said President Millerand, the new charter of Europe and the world and it constituted the sole guarantee that France possessed after four years of war that the injuries she had suffered would be repaired. The most elementary justice required that its terms be fulfilled and that France should have the means of making sure that her enemy of yesterday was not preparing a new attack for tomorrow. If France did not watch scrupulously over the execution of the Treaty she would betray the soldiers who had fallen and would deliberately sacrifice what she had a right to expect from her victory. In Germany, as was well known, the press continued to preach the duty of hating France and insisted that France was actuated by imperialistic motives. This had arisen simply from the fact that France had insisted that the Treaty be executed. Evidently they thought at Berlin that they might win from among the Allied Powers some support for a programme of revision. For example they planned to discuss with the Allies, when they

should meet at Geneva, the question of reparations although that question had been definitely settled by the Treaty. France had succeeded in avoiding this danger in that instance. At the international financial conference at Brussels (see WAR OF THE NATIONS) France had tried to checkmate this movement by insisting that the debates should not deviate from their real purpose and go into the question of revising the Treaty. France remained entirely faithful to her alliances in spite of the efforts in certain quarters to exaggerate the differences of policy between her and England on the one hand and between her and Italy on the other. France had no intentions that could not be reconciled with the legitimate interests of her Allies. In spite of the divergencies in certain respects between the views of Millerand and Lloyd George, the Anglo-French relations continued to be entirely cordial. As to Italy, the interview between Millerand and Giolitte at Aix-les-Bains had forestalled any misunderstanding as to relations between Paris and Rome. The Franco-Italian alliance remained solid. With Belgium, of course, her alliance was beyond question as had been recently emphasized by the military accord concluded between the two states some weeks before. President Millerand declared that France would watch with jealous care against any attempt upon the interests or rights of the nations that had had their birth, or had been revived, as the result of the victory. This referred especially to Poland and the case of that country proved that there was not only a moral but also a political duty of aiding nations that had arisen as the result of the war and of protecting and maintaining them. This constituted a guarantee of the new balance of power in Europe. The French foreign policy was above all a policy of peace and international justice. France was trying to open in a practical manner the way for the development of the League of Nations but she did not intend to be taken unaware by the criminal designs of those who hoped to find a possible revenge for their defeat through systematically favoring in Europe the elements of disorder and anarchy.

While in England, the United States, Italy, and among liberal or radical groups elsewhere, the Treaty was criticized as too severe against Germany, not from the point of Germany's deserts, but from practical considerations of the effect upon the future peace of Europe, the prevailing view of French publicists, as quoted in the press, continued to be precisely the opposite. In addition to the views noted above, the following summary of articles by well-known publicists is fairly typical of the French official attitude during the year: By the convention of Spa, Germany was to deliver to France each month 1,550,000 tons of coal. In the month of August she delivered 1,600,000 tons. She did this simply because penalties were attached to her refusal, since the convention provided that if she did not keep the agreement the basin of the Ruhr would be occupied. This showed that the only way to insure German execution of the terms of the Treaty was to impose penalties in case of failure, but that is precisely what the Treaty had not done. The only sanctions in this bulky document were comprised in a page or two and when boiled down amounted only to this: As a guarantee of the execution of the terms by Germany, the Allies will occupy for 15 years the German territories west of the Rhine. Now if

Germany had been victorious she would not have been satisfied by such slight measures. The Treaty of Frankfurt after the war of 1870-71 showed what her policy would have been. By that Treaty, if France had not paid within 40 days her first half-billion the Germans were to remain on the Somme, the lower Seine, and the right bank of the Eure, that is to say in the very heart of France.

Many details were revived by French publicists during the year as to the severity of the German terms in 1871 and the subsequent relentlessness of Bismarck. These misdeeds of the Germans in 1871 formed indeed a considerable part of the French discussions in the press, the inference being, apparently, that although it was a policy that had been attacked by Frenchmen as criminal for the past 50 years, and celebrated in French popular literature as proof of German brutality, it nevertheless set an example for France to follow when her time came. It was pointed out that the same French writers who held up Bismarck during the late war as an arch fiend seemed to regard him, after the war, as a model for imitation. This line of argument very common in French journalism seemed to be unintelligible outside France even among those who sympathized with the policy of the French government. The theory that France should treat Germany as Germany had treated France seemed to dominate the minds of a great many prominent French writers, to the exclusion of all that had been said about the purposes of the war; the things that had been cited as menacing civilization were apparently now appealed to as motives for French policy. How far this represented the true French point of view could not be ascertained, but it fairly represented a great part of the discussion that appeared in the press.

Germany, according to the French view, was plainly counting on divisions among the Allies, specifically on such serious questions as those of Upper Silesia and Austria, and in general upon every incident which brought in question the application of the Treaty. The German press had made much of the good faith shown by the German government in carrying out the agreement of Spa as to the delivery of coal. But the Allies had reduced the amount of coal that they demanded and consented to certain advances to Germany. So it was to the interest of the German government to deliver promptly an amount of coal which was less than the Allies had a right to claim. Moreover the Allies did not insist upon the same quality of coal as had been promised. Altogether it was a relaxation of the stipulated terms. Then as to the agreement in regard to disarmament, Germany did not deserve any credit for accepting its terms because a period of grace was allowed. Finally the Germans were not satisfied with the agreement of Spa and already they were saying that it had caused much difficulty and were talking about the necessity of revision in Germany's interest. While the German ambassador at Paris maintained a perfectly correct attitude, Germany was trying in the autumn to induce France to accept the proposals that Herr Simons and Herr Stimmes had made at Spa, which looked to a colonization by Germans of the devastated regions of France. At the same time there were many demonstrations of hatred against France in all the large cities of the empire on the occasion of Hindenburg's birthday, and in the

course of them the revision of the Treaty was violently demanded. German official delegates had insinuated themselves into the Brussels Conference and there lobbied among the neutral and Allied nations in order to win their compassion. It was even said that Germany was on the point of bankruptcy; that the taxes yielded no results; that they could not issue loans to consolidate the floating debt which exceeded 186,000,000,000 francs August 31, and was increasing every day; that the circulation of the paper marks had reached 900,000,000,000 and was still increasing; that, in short, Germany could not pay a cent toward reparations. The same tactics were followed systematically. Germany wished, contrary to the Treaty, to have the amount of her indebtedness fixed in accordance with her ability to pay because she hoped to obtain in advance a reduction of the debt. Fortunately the League of Nations under the presidency of M. Bourgeois had refused to concern itself with these matters. Such in general was the tone of French comment on the situations arising between Germany and the Allies, described in detail under the WAR OF THE NATIONS.

FRANCE AND THE VATICAN. Throughout the year 1920, there was frequent discussion of the resumption of official relations between the French government and the Vatican. Several incidents including the funeral of Cardinal Amette, in which members of the government paid honor to the dead indicated the adoption of a new attitude toward the Holy See. In November, after the nomination of Cardinal Dubois as archbishop of Paris, the subject again was brought before the public. On this occasion the Radical party renewed its expressions of alarm. As anti-clericals, they naturally sought to prevent the renewal of diplomatic relations of the Vatican. The government on the other hand had clearly set forth the reasons for renewing these relations and a measure to that effect had been introduced in parliament after the subject had been investigated by parliamentary committees. The Radicals asked what advantage this policy would have and they drew the lesson from the nomination of the Cardinal as archbishop that if the relations with Rome were renewed, Rome would have the right to nominate an archbishop of Paris without consulting the government. In reply to this it was said that it had no relation to the new bill. The law separating church and state was still in force, so the nomination of an archbishop of Paris depended only on Rome in any case, under this law, and a resumption of all diplomatic relations would make no difference. The object of such resumption was to place matters of foreign policy on a better footing. It would not affect existing laws. As to the condition of the Church in France, a Catholic writer in the *Revue des Deux Mondes*, after analyzing the law of 1905, concluded that the associations of worship of 1905 offered the church in France the best means of escape from the crisis in which it found itself. As soon as the question of renewing diplomatic intercourse with the Vatican came up, the Church authorities naturally began to concern themselves with the laws affecting the Church in France. Fifteen years had passed since the law of separation (1905). The Pope, Pius X, in view of the defects of the new laws had forbidden the use of the associations so long as the priesthood was not secure, but since then,

the council of state and the supreme court in its decisions had constantly protected the rights of the priesthood. Hence, it was argued that the Holy See might feel assured in regard to the associations and ought now to have no objection to their functioning. At the same time it seemed natural to the Vatican that the French government should wish to know about the nomination of bishops in the future. The re-opening of diplomatic intercourse with the Vatican would admit the discussion of that matter. In short, the situation as summed up by friends of the new bill was briefly as follows: There was a law of separation and it was observed. There was also to be under the present bill a restoration of intercourse which would make it possible to discuss questions affecting both parties concerned. The question was voted upon in the session of November 29. After an explanation by the prime minister, M. Leygues, the Chamber passed a vote of confidence of 387 against 195 and then voted for the law by 397 against 209.

POLITICAL SITUATION IN DECEMBER. As is shown in the article WAR OF THE NATIONS, all French foreign policy during the year was marked by a spirit condemned as reactionary by the liberal element in Europe and the United States. The election of November, 1919, was plainly a triumph of the Conservative parties and it seemed to represent the state of the public mind at that time. The so-called Radical Socialists, who it will be noted were neither Socialists nor particularly radical, lost their numerical superiority in the Chamber and power passed into the hands of the national bloc formed out of the parties of the Right which had won the victory at the polls. This national bloc was in control throughout the year 1920. Its principles were characterized by its opponents as main militarist, clerical, and reactionary. It was behind the government in its vigorous execution of the Treaty, its constant suspicion of German treachery and ambition, and its renewal of relations with the Vatican, etc. In general the parties of the Right were intensely nationalist abroad and conservative at home, favoring uncompromising measures against the Socialists, extreme radicals, and strikers. M. Millerand had perfectly represented them in his insistence on strict fulfillment of the Treaty and his opposition to the British policy of conciliation. It was only under great pressure from Lloyd George that he had agreed at San Remo to discuss with the Germans the questions of reparation, disarmament, and coal, and he was with difficulty brought to the attitude that he took at the Spa conference. After the Spa conference the Chamber voted a resolution disapproving the policy of discussing matters directly with Germany. There was reported to be a tendency toward a more liberal policy at the end of the year. M. Leygues, the new prime minister, for example, had acted in direct opposition to the spirit that had animated French foreign policy when he supported the Brussels reparation conference and, moreover, he had openly condemned the former policy towards Germany by nominating as French delegates to the conference functionaries of the government. Again he ran counter to the militarist spirit of the Right in favoring the reduction of military service and in the matter of the army. He held that general opinion demanded a short term of service and strict economy in military expenditures. This

was brought to an issue as above noted by the resignation of the war minister, M. Lefèvre, who along with the general staff wished the long term of service. It was thought by some that this resignation would cause immediately the fall of the government, but down to the close of the year this had not happened. In liberal quarters it was pointed out that although the attempt to fill the public mind with the constant dread of the revival of German aggressive military power had been most skillfully carried on throughout the year, there were signs in December that it was less successful. Reports of German military preparations for the future under the guise of police and civic defense were circulated without interruption during the year and at the close of the year as noted elsewhere Marshal Foch was charging the Germans with plain violation of the Treaty in the matter of the police forces. There was a great outcry in the nationalist press over these charges at the close of the year, but opponents of the government declared that there was no evidence that public opinion was deeply disturbed by it. On the contrary, they said, there seemed rather to be a general insistence upon national economy, reduction of all unnecessary expenditures and of taxation, and a return to the works of peace: that there was arising a stronger opposition to military adventures abroad, whether pertaining to the extension of the French colonial empire or to the crushing of Germany.

The above, however, represents only the point of view of the liberal element. On the other hand there were indications that the force of conservatism was still in control and that the Leygues government was losing its power. It was criticized in many quarters for its laxity. In the country there were signs of impatience with its lack of vigor in the matter of the German indemnity. The peasants had been made to believe that Germany would be made to pay promptly and they were beginning to complain of false promises. Among the people, it was not understood why France should make advances of money to Germany as a condition of Germany's supplying the coal that was due. This outcome of the Spa conference though intelligible enough to well-informed persons was incomprehensible to the masses. Moreover, there were indications that Millerand's politics were still generally favored and that Millerand himself was incensed by the prime minister's departure from them. Impartial observers believed that the time had not come for success of a more liberal and conciliatory policy, and that in a trial of strength, the element represented by Millerand would prevail.

FIFTIETH ANNIVERSARY OF THE REPUBLIC. The entire country celebrated on November 11, the 50th anniversary of the republic, at the same time that it celebrated the second anniversary of the armistice. The occasion was celebrated by the transfer of the heart of Gambetta to the Pantheon and by the burial of the body of an unknown soldier at the Arc de Triomphe. An impressive ceremony was held at the Pantheon at which the President, M. Millerand and the Cabinet, Representatives of Parliament, and Marshals of France were present; hymns were sung in honor of France and addresses were delivered. Ceremonies at the same time were held throughout the provinces and especially at Jardiès and Verdun. The burial of an unknown

soldier was also a feature of the English celebration of Armistice Day.

THE PRESIDENCY. The election of two presidents in the course of the year revived discussion of the presidency, and the question of revising the constitution in order to change the functions of the president was frequently debated. Many objections were raised to the present limitations of the office, which were of a nature to reduce the incumbent in the opinion of many to a mere figure-head and to lead to the choice of mediocrities. The difference between the powers of the French president and those of the President of the United States was often pointed out, and it was even argued that the authority which constitutional changes had left in the hands of kings in the few remaining constitutional monarchies, surpassed that of the French president. On the other hand the presidency in the United States seemed to many a bad model for France since it was based on a system more antiquated than the French. Many solutions were offered and criticisms made from widely varying points of view. In general, among the conservative element it was thought to be an unpropitious time to make the change and that it was better to wait until the difficulties following the war had been reduced.

MARSHAL FOCH AND M. CLEMENCEAU. In November there was a lively discussion in the press of certain points at issue between M. André Tardieu and Marshal Foch. The chief question had to do with relations between the latter and M. Clemenceau at the crisis of the war. Marshal Foch said that he had been raised to the supreme command only after M. Clemenceau had yielded to the insistent demands of others including Marshal Haig, and he declared that his relations with M. Clemenceau had been strained. M. Tardieu speaking in the name of M. Clemenceau replied that it was M. Clemenceau who had obtained for the Marshal the supreme command and moreover, that M. Clemenceau had been the constant champion and defender of Foch throughout. Denials on one side or the other followed and for a time the subject assumed a space in the press far out of proportion to its importance.

REGIONALISM. In 1920 the subject of decentralization was under discussion. For a long time the movement had been going on and various projects for regionalism had been submitted. In 1920, several of them were brought before the government and subjected to the examination of the cabinet. In the autumn the principal project to this effect, comprised the following aims: To relieve the central power of decisions involving small questions which might with advantage be settled by local organs; to facilitate local initiative where it has already developed since the war; to give to the respective regions of France more intense local spirit. This plan looked to the establishment of regional councils composed of representatives from the general councils and from the chief professions and chambers of commerce in the region. It was argued that so far as the expense was concerned, the plan was greatly reducing costs in that it would do away with many offices in the department. It did not aim to restore the old historic names of Burgundy, Provence, etc., but to name the new regions after their principal city.

FRANKS, Sir KENDAL. British surgeon, died, May 20. He was born Feb. 8, 1851, and educated at Trinity College, Dublin, and at Leip-

zig; served in South Africa and was consulting surgeon to the Johannesburg Hospital and president of the South African committee of the British Medical Association. He was afterwards examiner in surgery at the University of Dublin and surgeon-in-ordinary to the Lord Lieutenant.

FRASER, Sir JAMES. Scottish physician, died, January 4. He was a professor in the University of Edinburgh after 1877. He was born at Calcutta, India, Feb. 5, 1841, and educated at the University of Edinburgh. He held many important offices on medical commissions and in medical institutions, having been president of the Indian plague commission, 1898-1891; president of the Association of Physicians of Great Britain and Ireland, 1908-9; a member of the University Court, 1904-13, etc. He was dean of the faculty of medicine at the university from 1880 to 1900. He wrote papers for the transactions of the chief medical societies.

FRASER, Sir THOMAS RICHARD. British medical authority, died in January. At the time of his death he was emeritus professor of materia medica in Edinburgh University. He was born in Calcutta, India, Feb. 5, 1841, and graduated in medicine at Edinburgh in 1862. In 1877 he was appointed there to the professorship of materia medica which he held throughout his life. He was dean of the faculty of medicine from 1880 to 1900. A partial record of his official career is as follows: Medical Adviser to the Prison Commission for Scotland; Representative of the University on the General Medical Council after 1906; President of the Indian Plague Commission, 1898-1901; President of the Association of Physicians of Great Britain and Ireland, 1908-9. Down to his time the students had been taught about the preparation of medicines rather than their action. Sir Thomas Fraser attempted to fill the requirement of a definite knowledge of the action of drugs, and his success in the study of symptoms in connection with treatment and of the precise action of drugs upon the tissues of the body helped to bring on a new era in therapeutics. His work was studied widely by the physicians of his time.

FRENCH, PERCY. British humorist, author, and artist, died, January 24. He was born in 1854, and educated at Trinity College, Dublin. After six years' work as a civil engineer, he became the editor of a Dublin humorous paper and later composed many songs and wrote the words for them. He studied painting and produced some paintings of Irish scenes. He gave a series of entertainments in which he combined songs, narrative, and sketches. Among his writings may be mentioned: *The First Lord Liftinart*, *Phil the Fluter's Ball*, *The Mountains of Mourne*, *Come Back Paddy Reilly*, *Noah's Ark*, etc.

FRY, JACOB. Theologian, died February 19. He was born at Trappe, Pa., Feb. 9, 1834; graduated at Union College in 1851, and at the Lutheran Theological Seminary at Gettysburg in 1853, when he was ordained to the Lutheran ministry. After holding pastorates at Carlisle and Reading, Pa., he became a professor in the Lutheran Theological Seminary in Philadelphia in 1891, holding that chair until his death. He was author of *Elementary Homiletics* (1897), *The Pastor's Guide* (1915), besides various tracts and sermons.

FRYER, Sir CHARLES EDWARD. British authority on fish culture, died at Watford, England, November 19. During many years he was

the author of numerous annual and other reports on the fisheries. He was born in July, 1850, and entered as clerk in the office of the inspectors of fisheries in 1869. He was a member of various commissions of inquiry into the fisheries of the British Isles from 1874 to 1915; rendered important service to New Zealand in the introduction of trout; was a member of the most important fishery congresses during many years; and from 1874 to 1890 was editor of *The Colonies and India*. He wrote various treatises on the subject of fisheries including *Relations of the State with Fishermen and Fisheries* (1883); *International Regulation of the Fisheries on the High Sea* (1910); and *The Management of our Salmon Rivers* (1916).

FRATERNAL INSURANCE. See INSURANCE.

FRENCH. See FRENCH LITERATURE, DRAMA, SCIENCE, NORMANDY, AVIATION, INSURANCE.

FRENCH. See PHILOLOGY.

FRENCH ACADEMY. See ACADEMY, FRENCH.

FRENCH CONGO. See FRENCH EQUATORIAL AFRICA.

FRENCH EQUATORIAL AFRICA (formerly FRENCH CONGO). A French colony situated in equatorial Africa, with Kamerun on the northwest, Wadai on the north, Bahr-el-Ghazal on the east, Belgian Congo on the southeast, and the Atlantic Ocean on the west. Area, about 672,000 square miles; population, estimated in 1915 at 9,000,000. The resources, though undeveloped are extensive, including wild rubber and many valuable woods. Coffee is produced and palm-oil is to some extent exported. The population has been ravaged in late years by the sleeping sickness. In 1917 the exports amounted to 27,732,410 francs and the imports to 9,575,000 francs. Whale-fishing was begun in 1912. A considerable amount of shipping enters the chief ports of Libreville and Port Gentil. There is a telegraph line between Brazzaville and Loango, which communicates with the English Atlantic cable, the total telegraph line in operation being about 2366 miles. The budget for 1919 showed the following figures: General budget, 4,200,000 francs; colonial budget divided as follows: Gabun, 2,503,200 francs; Middle Congo, 2,587,311 francs; Ubangi-Shari, 2,315,000 francs; Chad, 3,725,000 francs.

It was divided in 1910 into the districts of Gabun, the Middle Congo, and the Ubangi-Shari colonies and Chad territory, to which after the war the German colony of Kamerun (q.v.) was added. In 1911 France ceded to Germany a part of her equatorial territory in return for German recognition of the French protectorate over Morocco, but this region was returned to France along with Kamerun. The colony is under the governor-general of Equatorial Africa and each of the divisions is under a lieutenant-governor and possesses an independent administration including an administrative council. The headquarters of the governor-general are at Brazzaville and he is assisted by a secretary-general and a council of government. There is a general budget for the colony as a whole, and there are separate budgets for each of its divisions. Governor-general in 1920, M. Augagneur.

In 1920 it was reported that the natives had suffered heavy losses from ravages of disease. At that time plans were made for improving the means of transport on the coast and in the in-

terior. In particular work was being pushed on the railway from Brazzaville to the sea, the only means of communication down to that time being the Belgian railway. The governor-general in 1920 was M. Augagneur.

FRENCH ESTABLISHMENT IN OCEANIA. A French colony in the Southern Pacific Ocean consisting of scattered groups and single islands. Total area, estimated at 1520 square miles; population, Dec. 29, 1911, 31,477; estimated in 1919 at about 81,200. Capital, Papeete, on the island of Tahiti. The main groups are the Society Islands, of which the most important are Tahiti and Moorea; the Marquesas Islands; the French Leeward Island; the Gambier, Tubuai, and Rapa groups of islands. Tahiti is celebrated for its fine climate and picturesque scenery. Its chief products are pearls and mother-of-pearl, and it produces, besides the grains and vegetables suited to temperate climates, a variety of tropical fruits. Its chief industries are the working of copra, rum, and zinc. The budget of the entire colony in 1919 was 3,879,000 francs. It is under the administration of a governor who is assisted by an administrative council.

Phosphate is produced in and exported from the Society Islands in considerable quantities. In 1920 nearly all of it was exported to New Zealand. Before the war much of it went to San Francisco, some to Europe, particularly France, and a considerable quantity to Honolulu. In 1919 the production was approximately 40,000 metric tons, and it is reasonable to expect that the production will rapidly increase.

The great difficulty encountered in this enterprise, as in all others in the colony, was that of procuring suitable labor. To meet this difficulty the French government has enacted a decree providing for the importation of foreign labor, and fixing the conditions of such importation.

FRENCH GUIANA (CAYENNE). A French colony and penal settlement on the northern coast of South America. Area, 34,069 square miles; population in 1918, 26,325; unofficially placed in 1919 at 49,231. Capital, and only seaport, Cayenne with a population in 1919 of 13,619. At the beginning of 1919 there were 24 primary schools with about 2000 pupils. The chief products are rice, corn, cocoa, coffee, sugarcane, indigo, manioc, tobacco, and gutta percha; and the chief industry is gold-mining of which the product in 1918 was 80,477 ounces. Silver, phosphate, and iron are also mined. Imports in 1918, 15,308,526 francs; exports, 15,821,697 francs. The exports were mainly cocoa, phosphate, gold, woods, and hides. At the beginning of 1919 the penal colony comprised 6036, of whom over 2000 had been freed. It is under a governor, assisted by a privy council and a council-general of 16 members elected by French residents. It sends one deputy to the French parliament.

FRENCH GUINEA. A French colony of West Africa, situated on the coast between Portuguese Guinea and the British colony of Sierra Leone. Area, about 93,000 square miles; population in 1917, 1,812,579, including 1166 Europeans, of whom most were French. Capital, Konakry, with a population of 6623. The chief commercial centre is Kankan. Other towns: Boké, Kindia, Dubreka. The chief product and export is rubber. Other products include palm-oil and palm-nuts, millet, gum, peanuts, and

coffee, and in parts of the country cattle are raised in abundance. Gold is found. No later figures for trade were available than those contained in preceding YEAR BOOK. There is a railway from Konakry on the coast to the Niger River and thence to Kankan, a total distance of 776 miles. There are cable communications with France, Pernambuco, and Liberia. In 1919 the budget balanced at 9,548,000 francs. In 1919, 124 vessels of 154,246 tons entered the ports and 121, of 161,426 tons cleared.

The total foreign trade in 1919 was valued at \$9,358,166 as against \$6,919,551 in 1918. The chief imports in respect to values in 1919 were cotton goods which were far in excess of any of the others and next came metal manufactures and tobacco. The leading exports in respect to value were palm kernels, rubber, and hides. In 1919 France and her colonies received 62.33 per cent of the exports and England 11.4 per cent. Of the imports, France and her colonies supplied 22 per cent.

The tonnage for 1919 was as follows: Vessels entered, 288,614; cleared, 293,750.

FRENCH INDIA. The name applied to five French dependencies in India, with an area of about 196 square miles, and population of 266,064. They are: Pondicherry, Karikal, Chandernagar, Malé, and Yanam. The government maintained in 1918, 61 primary schools and three schools with 312 teachers and 9676 pupils. The chief products are rice, sugar, cotton, coffee, cacao, manioc, and peanuts. Imports to the three ports in 1918 were, 14,289,071 francs, and exports, 15,886,384. Two hundred forty-one vessels entered the three ports in 1918. Budget, 1919, balanced at 1,963,500 rupees. The colonies are under a governor whose seat is at Pondicherry and they are represented in the French parliament by one senator and one deputy.

FRENCH INDO-CHINA. A French dependency in southeastern Asia, consisting of the following five states: Annam (52,100 square miles, with a population in 1914 of 5,200,000); Cambodia (45,000 square miles, with a population of 1,634,252); Cochin-China (20,000 square miles, with a population of 3,050,785); Laos (98,000 square miles, with a population of 640,877); Tongking (46,400 square miles, with a population of 6,119,720); also the leased territory of Kwangchow-Wan (190 square miles, with a population of about 168,000). Capital, Hanoi, in Tongking, with about 150,000 inhabitants in 1915. Other towns: Cholon, 191,665; Bindinh, 75,000; Saigon, 72,000; Pnom-penh, 54,621; Hué, 65,000; Vien-tiane and Haithong, 27,000 each.

Tongking in the northern part of Annam has mining and manufacturing as well as agricultural interests. Central Annam, which has as its general port, Tourane, is agricultural and produces for export cinnamon, tea, and sugar. Coal, lignite, tin, zinc, antimony, and wolfram are mined. The coal production in 1918 was 636,000 tons. Total imports in 1917, 373,555,560 francs; exports, 430,200,036. Rice formed about 70 per cent of the total exports. In 1919 the exports from Great Britain, which were chiefly cotton, amounted to £560,379. There is a railway from Saigon to Mytho. The total length of railway line was 1300 miles at the beginning of 1919, and two-thirds of this was owned by the government. Of the five states above mentioned, Cochin-China is a colony, and the other

four are protectorates. The whole dependency is under a governor-general, assisted by a secretary-general, and each of the states is under a resident superior, except Cochinchina which is under a governor. Cochinchina sends one deputy to the French parliament. Annam, Cambodia, and Laos are under local kings who govern under the direction of the French authorities. The whole of Indo-China has a common budget, and there is a separate budget for each of the states. At the beginning of 1920 the military force in the whole country numbered about 25,514.

Governor-general, in 1920, M. Long. The policy pursued by France has been in general to give the natives as large a share in the government as they seem capable of bearing. Although some criticisms were directed against the government and although it was asserted by certain objectors that French rule in that region was not likely to endure, the war seemed to prove that the French administration was firmly entrenched and that it had the confidence of the natives. France received from Indo-China during the war, not only an important contingent of troops, but large supplies of money, boats, provisions, and raw materials. After the war, the condition of the colony appeared to be prosperous. Under the administration of Governor-General Sarraut, the reorganization of the native judicial system had been begun, and in 1918, four codes had been promulgated, laying down the general and elementary principles that should guide the judicial administration. In 1920, more specific judicial reforms were projected, including the organization of Anamite courts, the regulation of the civil procedure, the issue of a penal code and a code of penal procedure. New legislation was projected, conforming to the necessities of the different parts of the colony. Much progress had been made in education, especially in primary education. The number of schools had steadily increased and the number of pupils had increased in proportion. A higher school of pedagogy was established to make up for the lack of European teachers and the first results of it were reported to be excellent. The administration of the higher education had already shown its efficiency. There is an Indo-Chinese university, including schools of medicine, pharmacy, law, administration, pedagogy, agriculture, public works, and veterinary science; and it was planned to add to these, schools of commerce, applied science, fisheries, and navigation.

FRENCH IVORY COAST. See **IVORY COAST.**

FRENCH LITERATURE. What will be eventually the trend of philosophical thought that will prevail in France recuperating from the war, it is not possible to say yet. But while many writers are already groping in all directions, many feel that first of all France ought to become as fully conscious as possible of what the war has meant for the country. And after two years during which the war was rather avoided in literature, owing to exhaustion and the need of mental rest from the long nightmare, we witness this year a renewed interest in matters pertaining to the four momentous years.

BOOKS ABOUT THE WAR. How the French feel about the war is well shown in books like the following, written by some of their masters of the pen: *Au bord du Gouffre*, by V. Margueritte,

a discussion of the five first weeks of the war, supporting by facts the theory of a terrible mismanagement of affairs, until one man who had kept his head cool, Gallieni, saw a chance to drive a wedge into the foe's army; Marius-Ary Leblond, *Gallieni parle*, the diary of the great chief by his two secretaries (with a volume of *Mémoires* by Gallieni himself); again, J. Bédier, *L'Effort français*, one of the most inspiring war-books showing in a sober but impressive way what the French army has achieved—not one battle scene, but with information of absorbing interest on the armaments, the drill, the new schemes for battle, the tactics; *Au G. Q. G.* (Grand Quartier-Général). The author of the last-named, Jean de Pierrefeu, is the man who, from 1915 until 1918, wrote out every day the official War Bulletin of the French army and no one knew more than he about the General Staff. His observations are at times in the note of genuine admiration, at times in a tone of biting sarcasm. Some critics have compared him to Saint-Simon. By no means of the same excellence is M. Boulenger's *La Cour*—also the G. Q. G.—although it received the Prix Stendhal.

Then there are new accounts of battles, either by outsiders, like Le Goffic's 3d vol. of *Histoire des Fusiliers Marins, Saint-Georges et Nieuport*; Madelin's *Verdun*, and *La Bataille de France (21 mars-11 nov. 1918)*; or diaries like Lorédan's *Lille et l'Invasion allemande* (when 3000 Frenchmen tried to hold back 80,000 Germans); and R. Fonck, *Mes Combats* (prefaced by Foch). We must name again here R. Dorgèlès' *Croix de Bois* (Prix de la Vie Heureuse) which was issued too late for full report in last year's YEAR BOOK. By general consent this will remain the book par excellence for an account of the hardships and the heroism of the soldier of the Great War, with no jingoism indeed, and yet with no morbid sentimentality degenerating into fanatic pacifism. Florian Parmentier's *L'Ouragan* is of the same order, and has been much praised. The tragically morbid note remains in several books which threw men like Barbusse into the arms of Bolshevism. Barbusse himself in *Lueur de l'Abîme* gives up discussing by 'romans à thèses,' and inveighs directly against present society. Around him are a group of men betraying the same tendencies, e.g. Raymond Lefebvre, *La Révolution ou la mort*; R. Lefebvre et Paul Vaillant Couturier, *La Guerre des Soldats*—a pale reminiscence of *Le Feu*. Less morbid is A. Mailliet's *Sous le front du Destin*, a sensitive character torn away from his peaceful occupations, but who finally sees a redeeming feature in war inasmuch as it emphasizes the idea of sacrifice of self to the welfare of all.

Other works in which war reminiscences are presented under cover of novels are: J. Giraudoux's *Adorable Clio*, recalling his days in the hospital of Châteauroux, and with more emotion than he had been willing to show in his well-known *Lectures pour une ombre*. Werth's *Clavel chez les Majors*, follows *Clavel Soldat* (1919). In the form of war-diaries we have Mad. Alphonse Daudet's *Journal de Guerre et de Famille*. P. Valdelièvre in *Les Bagnes d'Allemagne*, and Max Anglès in *La Geôle, Camp de Concentration* describes the terrible treatment of prisoners in Germany. Paul Adam's *Reims dévastée* came out posthumously; Merki also has a book on *Reims*. Muret publishes *Littérature Allemande pendant la Guerre*, and the diary of a German.

The number of *war novels* was considerably on the increase. L. Dumur's "Zolaistic" *Nach Paris* came out in book form and caused much comment (see *Mercur de France*). Claude Farère's *La Dernière Déesse* (War being the last of deities to humankind) is a novel of the sea reminiscent of his play *Veillée des Armes*. In H. Bordeaux's *Œuvre de Chair*—a problem war novel: A French officer becomes engaged to a charming Alsatian girl and before a battle in which he fully expects to die the two yield to their love; after the war the girl, with her child, looks up the mother of the officer who understands that everyday standards can not be applied to war circumstances and adopts the child. R. Rolland continues his pacifist apostolate in *Clérembault*. A. Erlande, *Vivre et mourir là, roman d'une Anglaise en France*; Birabeau, *Annette et son Américain*, and especially Marcel Prevost's *Mon cher Tommy*, deal with the same popular topic; the last-named, showing a refined French lady who explains her love for the plain little bank clerk appearing as aviator hero, is remarkable. J. des Vignes Rouges, *Sous le brassard d'Etat Major*; Odette Dulac, *Faut-il* (a case of love for a mutilated soldier); Mary Florian, *On demande une Marraine*; Edmond Cazal, *L'Inféconde*; de Coulomb, *Fiancée de Guerre* are of the usual type of novel; P. MacOrlan, *Rob Bataillonnaire* is an amusing roman d'aventure; A. Maurois has *Nouvelles aventures du Colonel Bramble*. We must mention two interesting historic war novels: J. de Givry, *Fatale Servitude*, the story of a woman who, against orders, follows her husband to the front, and he, having given up all hope of inducing her to leave, shoots her in order to conform to discipline; and Ch. H. Hirsch, *La Chèvre aux pieds d'Or*, the story of a beautiful dancer who is shot while acting as a spy for Germany. An allegorical novel by Henry Jacques, *La Veillée de la Lune*, was much read. Following Voltaire's style, he supposes an inhabitant of the moon landing on our planet during the war and genuinely reflecting on what he sees; he pities humankind for the poor use of its intellect.

On the stage also there is a revival of interest in the war: Brieux's *Les Américains en France* (Odéon,—also given in New York) contrasts, or juxtaposes the French and the American characters—but he deals especially with women characters. Despite the admirable qualities of the American woman so efficient in social work, the young Frenchman does not find in her the real love he expects from his mate in life. It is the same problem as Colette Yver's in *Les Cousins riches* less delicately dealt with. Other plays though by less famous authors have been more discussed, e.g. Georges Bourdon's *Les Chaines* wherein the hero who had been an internationalist before the war becomes convinced that his ideal was a dream, while his friend, a Russian woman, remains true to her former theories; and Ch. Méré's *La Captive* which discusses the same idea: A Neustrian woman has a son by a countryman, then from a second marriage with a Gallois, she has another son. A war breaks out and the two sons fight on different sides. After the war they meet by chance, both being wounded, speak of their sufferings, and fall in each other's arms. Edmond Fleg's *La Maison de Dieu* treats the old theme of Lessing's *Nathan*. The representatives of four different religious creeds meet under the tent and they love instead of hat-

ing each other—a very delicate play. M. Donnay, in *La Chasse à L'homme*, discusses the difficulty for women since the war to satisfy their true vocation of marriage: A young chambermaid and a young chauffeur, both of the upper strata of society but forced down the scale, meet, and finally marry. *Le Retour*, by R. de Flers and Croisset, was greeted with much applause: A very sedate man becomes a war hero, and his wife is delighted and treats him as a hero when he returns; but he wishes only to return to his peaceful life. His disappointed wife flirts with a young officer, but gradually is won back to the non-romantic and more reasonable life. Romain Rolland's *Liluli* was hailed as a masterpiece by some, but by general opinion was pronounced a bore and a failure, and moreover it was not meant to be represented: The Gallipoulets and the Hurluberloches fight, driven against each other by Llop'n (the deity *L'opinion*), to conquer Liluli (*L'illusion*) . . . and so the satire goes on. The same is true of another allegorical play, *La Tragédie des Empires*, by A. Erlande, which embodies the truism that the world empire is a dangerous dream. Paul Claudel seems to have lost his literary power; *Le père humilié* is a war play referring to 1870-71, but applying to the last war as well.

In poetry, let us first of all mention the fine *Livre Epique, Anthologie des poèmes de Guerre*, by Prevost et Dornier. André Lamandé was awarded the Bourse nationale de Poesie for his elegant volume *Sous le Regard clair d'Athéné*. Henri Céard's *Sonnets de Guerre* are among the finest war poems published in France. Cécile Perrin's *Les Captives*—that is the women who are the "captives" of their sorrows and their solitude—was very well received. A. Dujardin, in *Lille captive* offers a diary in verse of the four years of occupation. Drieux de la Rochelle aroused much comment in his *Interrogation* (what the war meant) and with his *Fond de Cantine*. The famous cubist, Blaise Cendrars published *J'ai tué*. Good collections are: Roger Allard, *Elégies martiales*; Fr. Baron, *Sous le Casque des Lauriers* (very human); R. Arcos, *Le Sang des Autres*; J. Moulat, *La Torche enflammée*; Richardot, *Le Tocsin avant et pendant la Guerre* (1891-1919); Séguret, *Poèmes*; A. Flory, *Un Cœur de brave*; Martins, *Poèmes d'Alsace*; Guillemard, *Vers pour mon frère* (mort 1914), Mad. Claude Ferval, *La Trace de ses pas* (her husband was killed in war).

On the Literature of the War, consult: Albert Schinz, *French Literature in the Great War* (from 1914-19) with bibliography and index (Appleton, N. Y.).

We come now to French Literature, independent of the war:

THE THEATRE. Some of the great successes of the year were: Albert DuBois, *L'Hérodiade* (Théâtre Français), the story of Titus and Berenice told so well by Racine; variously discussed by critics, but accepted by the public. *La Maternelle*, from the novel by Frapié (Prix Goncourt) saw its success grow every month after April. *La Mort enchainée*, indisputably the greatest success of the second half of the year (Théâtre Français) with de Max in chief part: The author, Maurice Magre, a believer in reason, employs mythological terms. Sisyphus, the hero, is presented as fighting superstition; he commits some terrible and impious act and challenges the gods to punish him; they send death; he suc-

ceeds in chaining death; but the woman he loves and who loves another man delivers death; and death kills Sisyphe—who comes back to announce that the world must go on living and believing. This drama (in verse) is reminiscent of Æschylus, of Brieux, and of the philosophers of the eighteenth century, but it was a success. In *La Maison sous l'Orage*, by E. Fabre (Odéon), a father divorces and has a second son; the two sons quarrel over business and love; the true cause of all the unhappiness is divorce. The author has strongly resented being compared to Bourget on account of the "morality of the play." Curel's *L'Ame en folie* is a psychological play demonstrating that love in man is primarily a physical phenomenon modified, organized, intellectualized by the mind. In Pierre Wolf's *Les Ailes brisées*, father and son love the same woman (as in Racine's *Mithridate*) and the father finally yields. In Bernstein's *L'Animateur*, a violent and unpleasant play, a girl has a great admiration for the man she believes to be her father and who is now divorced; an ill-intentioned person tells her the truth, but she remains with the man who was after all her "spiritual father." Maurice Vernes drew crowds for a long time to the Champs Elysées for his spectacular adaptation of the *Mille et une nuits* to the stage. Saint-Georges de Bouhélier had a success of scandal with his *Esclaves*, an uncanny evocation of the world of courtesans and apaches.

Beside these particularly successful plays, there was an incredible variety of production, variety both in form and content. Any classification is impossible. Pierre Frondaie's *L'Appassionata* is a drama in the world of artists which stirred the audiences of the Porte Saint-Martin. *Maître de son cœur*, by Raynal (Odéon) is a re-edition of Musset's *On ne badine pas avec l'amour*—only here it is a young man, not a girl, who dies of love. *Une faible femme*, by Jacques Deval, (Théâtre Femina) shows a woman who has been lured to live a fashionable life by marrying without love, and now feels humiliated in her conscience. Tristan Bernard's *Les Petites curieuses* is a very keen discussion of love (four characters only); the cynicism is a little surprising in this usually good-natured humorist. A. Birabeau's *La Femme fatale* is an amusing comedy of a woman who seems very plain and yet turns out to be a "femme fatale." *Paraître* by L. Verneuil is a subtle play written for Sarah Bernhardt so that she may play the part of an invalid boy. Ch. Méré's *Les Conquérants*, revives the Romeo and Juliet theme in the modern world of industrialists versus old nobility. In L. Verneuil, *L'Inconnu*, a man consents to be accused of theft in order to save the honor of a woman. Sacha Guitry, *Je t'aime*, ridicules bourgeois sentimentality. Arquillères, *La Branche morte*, is the story of two brothers, one highly successful, the other sinking to the lowest depths of humankind. Henri Marx's *L'Enfant maître* had a short but much discussed career at the Théâtre Vaudeville, the thesis being that adultery, if openly committed, may lose some of its opprobrium. Lenormand's *Les Ratés* is an interesting study of two artists who had come to believe in their superiority because they were not successful and only when dying of misery see the stupid illusion to which they fell victims. Mme. Aurel's *L'insociale* is a one-act play advocating free-love. Mme. Rachilde's *La Poupée transparente* deals with maternal insanity.

Georges Berr, the famous actor, gives a play on *Monsieur d'Assoucy*, a contemporary player of Molière. Gabriel Imbart in *Le Fruit défendu*, gives a witty representation of the scene in the garden of Paradise in which the serpent and the monkey have some caustic remarks to offer; while A. Dumas, in *Le Premier Couple* (Théâtre Français) gives a picture of the so-called golden age when women were common property, but there comes a day when one woman experiences a feeling of shame and revolt, which one man understands. Polti dramatizes some scenes of the *Roman de Renard, le Goupil*. Cocteau aroused much interest by an original pantomime production with music of a farce, *Le Boeuf sur le toit*. At the Cirque d'Hiver, Gémier started a series of "Spectacles de la Vieille France," the first being *La Grande Pastorale*, an old Provençal mystery play with pageant, by Ch. Hellem and Pol d'Estoc. Merely good comedies were: Nozière, *Les quatre coins*, and *Tour de Cadran*; Picard et Mirande, *Un homme en habit*; *La femme de mon ami*; Eon et Machard, *Les Potaches* (school boys) which aroused vigorous protest. Among modern plays produced at the Vieux Colombier let us mention *Phocas le Jardinier*, a Christian martyr pictured by, and in the style of, Francis Jammes. Some thought Mazaud's *La folle Journée* remarkable for its cleverness, others for its fatiguing quality. Vildrac's *Paquebot Tenacity* was a moderately original play of two friends loving the same girl; but people go to the Vieux Colombier more for the acting than for the play itself. Jules Romains's *Cromedeyre le vieil* is a picture of a village in the mountains, away from all civilization, prehistoric in its customs, with herds of beings rather than individuals. Duhamel's *L'Oeuvre des Athlètes* is a cruel satire of so-called artists who succeed in fooling the public and having them believe in the existence of genius where there is nothing but plain humbug. The man aimed at was said to be Barzun, not unknown in this country.

A play, by Taride and Fauré, based on the novel *Get Rich Quick Wallingford*, met with success.

Closet plays are: P. Claudel's *Protée*, a continuation of Æschylus's *Oresteia*. And by the same *L'Ours et la Lune*, a play for marionettes.

A subvention by the government for a Théâtre Populaire has been granted; provisionally they will be housed at the Trocadero, beginning 1921.

The *Revue bleue* of Oct. 16, 1920, has an article by Rageot, on *Paul Spaak*, the foremost Belgian playwright of the day.

POETRY. The reader especially interested in poetry is referred to the monthly review of poetry in the *Mercur de France*, or in such occasional reviews as those by Vandérem in *Revue de Paris*. Here we will mention only: Henry Bataille, *Quadrature de l'amour*—disappointing to critics who consider the attempt by the famous author to be "gouaillieur" on a topic that remains grave is a failure; Henry Ghéon, *Le Miroir de Jésus, Sur les 15 mystères du Rosaire* (illustrated by Denis); P. L. Fargue, *Poèmes, suivis par Pour la Musique* (the genre of Heine); Lucie Delarue Madrus, *A Maman*; Emmanuel Hache, *Paroles d'un amant*; Eug. Figuières, *La Forêt sans feuilles*; L. Fabre, *Connaissance de la Déesse*; A. P. Garnier, *Les Corneilles de la tour* (which gossip about the life and inhabitants of the village). By way of innovation the ladies of the literary court of La Vie Heureuse award-

ed their prize this year to a poet, Edouard Goyon (already a laureate of the French Academy) for *Le Jardin des Dieux* (which is Algeria; Goyon is a librarian at Algiers). The following are a few titles which give an idea of the ultra-modern schools: Cubism: André Salmon (the poet of *Féeries*, and of *Calumet*), *Prikaz*; Blaise Cendrars, *Du monde entier*; F. Cocteau, *Poesies*; Pierre Reverdy, *Guitare endormie*, and by the same author, a little manifesto for Cubism, *Self-Defense* ("Inexplicable ne veut pas dire incompréhensible"). Post-Cubism: Paul Moraud (who was taken in this country under the protective wing of the *Dial*) *Lampes à Arc*; Maurice Réval, *Le Réve*. Finally the newest of the new, Dadaism: Francis Picabia, *Pensées sans langage*, and *L'unique cunuque*. As an offset to these, see George Fourest, *La Nègresse blonde*, a satire on the believers in novelty at any cost.

THE NOVEL. If one judges from popularity Pierre Benoit remained king of French novelists; he added to his list, *Koenigsmark*, and *L'Atlantide*, a Spanish story in Spain, *Pour Don Carlos* (in which instead of one "femme fatale," there are two) and he announced a novel on *Utah, the land of Mormons*. Moreover he had the good luck to arouse a formidable literary quarrel (see below, under *Criticism*). Marcel Proust, the Goncourt Laureate of the preceding year with *A l'ombre des jeunes filles en fleurs*, continues to be widely discussed and issued the third novel of the series, *Côté de Guermantes*. As in the former novels, nothing out of the ordinary happens; nothing at all of importance is discussed; and there is no attempt at style, indeed the style is voluntarily unchastized,—and these characteristics were the very things that caused admiration. The new Goncourt laureate, E. Perochon, is a poor schoolmaster near Paris; his novel *Néne* (abbreviation for Madeleine), is the gloomy story of a farm girl who with the greatest devotion takes care of the children of her widowed master, but is rewarded with such heartless ingratitude that she finally drowns herself. Other novelists considered were: A. Salmon, *La négresse du Sacré-Coeur*; J. Vignaud, *Saratti le Terrible*; Mme. M. Vieux, *L'Enlaidie*. Two authors have come to the forefront, although well known already, because they were awarded important literary prizes: Edmond Jaloux (the author of *Sanguines*) receiver of the Grand Prix de Littérature Française, published *Incertaine* and *Au-dessus de la Ville*. The last-named is the story of a young woman who sacrifices herself to her invalid brother, a famous author, and rejects her lover, only to find that the sacrifice was unnecessary. This note of disillusionment is predominant also in André Corthis, *Pour moi seule*, for which he received the Grand Prix du Roman: A bright woman has the dullest sort of life with a hopelessly uninteresting husband, with not even enough energy to do evil. And there are many other fine novels betraying this disgust for unromantic life,—no doubt a reaction after the terrible but constantly dramatic years of the war. Thus, Lavedan's *Irène Olette*, first part of a trilogy to be called *Le Chemin du salut*: the heroine is a woman whom every man is ready to love; she fails to find her ideal, and finally marries a man whose interested designs she guesses easily . . . will that be the "road to salvation"? A. Hermant also works on a trilogy: *L'Aube ardente* picturing youth with its expectations, followed by *La Journée brève*, dealing with man in

his few best years, and the end will be *Crépuscule tragique*. Marie Audoux gives a continuation of *Marie-Claire*, in *L'Atelier de Marie Claire*, not a gay description of the life of the working girl, but with the sort of sadness about it that arouses at least the Aristotelian sympathy. André Lichtenberger's *Biche* is a girl who is made to suffer and finally die by parents who are not bad but stupidly good and severe. On the other hand, Maurice Rostand continued his attempts to become famous in spite of his father; his *Cercueil de Cristal* left far behind the Hamlet-like novels just mentioned; so much so that few critics took it seriously.

H. Bordeaux is, as usual, vigorously optimistic in *La vie recommence*. Henri de Régnier publishes one of his finest novels of delicately ironical psychology with *Pécheresse*, the same theme as the *Princesse de Clèves*, or Tinaire's *Maison du Péché*, only that the heroine is a Protestant woman and the suggestion of perversity associated unconsciously in her heart with purity of the flesh is more stressed. The same note of the unconscious perversity of woman is at the bottom of Claude Anet's *Ariane, Jeune fille russe* (not for the "jeunes filles"). Here may be mentioned also *Chéri* (first published in *La Vie Parisienne*) by the "redeemed" Colette. Altogether love reigns supreme again in literature, almost as if there had been no war: Marcel Prévost, *La nuit finie*—in the style of the early Prévost, shows the tricks love plays, especially with those people who have the most delicate feelings. Eugène Montfort's *Cœurs malades* is a curious transposition in our age and under European sky (Île de Houat, facing Quiberon) of the story of Paul and Virginia. Fr. Mauriac, in *Chair et Sang* is less dogmatically Catholic than he had been in former novels, but still considers that religion alone can offer salvation to young people when the storm of love threatens their adolescence. M. Tinayre again sings the triumph of love in *Perséphone*. André Gide's *Symphonie pastorale*, an ironical title for a *roman d'analyse*, in which the peace of a quiet parish house is shaken by a blind girl whom the pastor adopts out of charity and who falls in love with her benefactor. Fr. de Miomandre *La Cabane d'amour*, and J. L. Vaudoyer's *Le dernier rendez-vous* are delicate love stories by two favorite authors of the day. The titles of the following novels explain enough their content: Binet-Valmer, *Le Passion* (written before the war); Maurice Magre (author of *La Mort enchaînée*) *L'appel de la Bête*; Maurice Darin, *La Bête et l'Ange* (struggle between the male "bétise" and the female "ruse"). And once more women use the novel to abuse women: Marie Laparcerie, *La Fête est finie*; Madeleine Marx, *Femme*, the latter much discussed, highly praised in radical quarters and translated into English). Of the humorous style P. Reboux's *Romulus Coucou* is an example, a story of a disappointed love of a colored man for a white woman, . . . ending duly in lynching. Children occupy the first place in H. Bachelin's *Le Petit*; in A. Machard's *Les cent gosses* (dialogues chiefly); the adolescent in André Obey's *L'enfant*. See other titles of children novels in *Revue Bleue*, 10 avril 1920.

Quite an important group of novels is inspired by the desire to cater to the public which has still a taste for adventures—possibly an after-taste of the war—provided however they be not connected with the great war. We have already

mentioned P. Benoit. Then, P. Adam, *Le Lion d'Arras*, an American who arrives as a conqueror in an industrial district of France, and conquers also a charming girl. Louis Bertrand, *L'Infante* is a beautiful historical novel, the scene of which is romanesque Spain; the author of *Séviennes*, Gabrielle Réval, offers another novel of Spanish life, *L'Infante à la Rose*; J. J. Tharaud, in *Marrakech, ou Seigneurs de l'Atlas*, gives a striking picture of the proud bandits of the African desert; and J. H. Rosny has a new novel of prehistoric reconstruction, *Le Félin Géant*. Maurice Renard's *Le Docteur Lerne* is in the vein of Wells' *Island of Dr. Moreau*. At the same time Jules Romains, in *Donogon Tonka ou le miracle de la Science* ridicules science as a means of conquering the world; while A. t'Sterevens, in *l'Apostat*, ridicules the Utopians who swarm since the war, Fouriéristes, Tolstoists, etc. Pierre MacOrlan, the author, recently, of *Au bord de l'Etoile matutinal*, writes an amusing *Petit manuel du Parfait Aventurier*; Alex. Arnoud's *Indice 33* is a great roman d'aventure soldatesque, style of *The Three Musketeers*; and Maurice Dekobra, in *Prince ou Pitre* shows a prince who prefers to be a clown because then he can act more according to his own individuality. Jean de Bussy, in *l'Eau ardente* offers a strong anti-alcoholic plea.

Short stories: P. Bourget, *Anomalies*; Pierre Mille, *Trois Femmes* (much read); Boyslevé *Nymphes dansant devant les Satires* (Arétin is the hero of one of the stories, which explains the title); H. de Régnier, *Histoires incertaines*; Gaston Picard, *Confessions d'un Chat* (much discussed); Elisa Rhaïs, *Café Chantant* (striking exotism); René Bizet, *Peines de Rien* (a young man who made a hit); Tristan Bernard is as gay as ever in *Le Taxi-fantôme*.

CRITICISM AND LITERARY EVENTS. Except perhaps the lively controversy as to whether P. Benoit, in his *Atlantide* did or did not plagiarize Sir Rider Haggard's *She* (see *Revue de Litt. Comparée*, January, 1921); the rather violent attack by Lasserre, in *Revue universelle*, July, on the style of Proust, the Goncourt laureate of 1919; and the discussion about Flaubert between Thibaudet and Proust (the first claiming that Flaubert was a thinker, the second that he was exclusively an artist), nothing disturbed much the peace of the literary sky. Dadaism acquired some momentum in the course of the year and is taken by the public as merely a new step both in literature and in art, in the evolution of the futurism and cubism.

Work in the history of literature is proceeding now almost at the normal rate again. The following are a few of the newer publications: The last volume of the Edition municipale de Bordeaux of Montaigne's *Essais*; P. de Nolhac, *Les derniers amours de Ronsard*; a reprint of Ronsard's *Livre des Follastries* (1553); a new impression, at Strassburg, of d'Urfé's *Astrée*; J. de Bonnefon, *Port Royal-des-Champs*; Doumic, *Saint-Simon, La France de Louis XIV*; J. L. Marsan, *Beaumarchais et les Affaires d'Amérique*; Ducros, *Vie de Rousseau*, Vols. II and III; D'Arbelet, *La Jeunesse de Stendhal*, and two more volumes of the Champion edition of Stendhal's works; L. Estève, *l'Hérédité romantique* (condemned); G. Simon, *l'Histoire d'une Collaboration* (Alex. Dumas and A. Maquet); P. Sabatier, *L'Esthétique des Goncourt*; I. Rimbaud, *Mon frère Arthur*; Gohin, *L'œuvre de Samain*; R.

Ghil, *La tradition de poésie scientifique*; Soizat, *le Symbolisme de Baudelaire à Claudel*; Dujardin, *De Mallarmé au prophète Ezéchiel, essai d'une théorie de Réalisme symbolique*; F. Carco, *Poésie moderne*; A. Thibaudet, *Les idées de Ch. Maurras*. The *Revue des deux mondes* publishes "Nouvelles lettres de Balzac à l'étranger," and "Lettres de Brunetière au cardinal Matthieu." Albalat, *Souvenirs littéraires*. The *Library Journal*, of New York, November 15, published a list of the best French periodicals. The centenaries of Fromentin, Augier, and of Lamartine's *Méditations*, and the cinquantenaire of Mérimée's death were commemorated. The French Academy elected Bédier, Fiers, Chevillon. Among the dead are P. Adam, Lintilhac, Daniel Lesueur, and Réjane. Edm. Jaloux won the Grand Prix de Littérature; André Corthis, the Grand Prix du Roman (for *Pour moi seule*); Pérochon's *Nené* won the Prix Goncourt; and a poet, Edm. Gojon, won the Prix de la Vie Heureuse. The King of Belgium gave his approval to the foundation of a Belgian Académie de langue et de littérature française.

Excellent work is done for the knowledge of French Literature by the periodical *La France* (220 W. 42d street, New York) and by the Agence de Librairie, 29 E. 28th street, New York.

FRENCH SCHOLARSHIPS. See UNIVER-

SITIES AND COLLEGES.

FRENCH SOMALI COAST. A French colony situated between the Italian colony of Eritrea and British Somaliland, on the Gulf of Aden. Area, about 5790 square miles; population estimated in 1917, 206,000. The chief city is Djibouti which had in 1917 13,608 inhabitants, of whom 294 were Europeans. It is the main port and the seat of government. There is a considerable inland trade and the fisheries on the coast are of most importance. Salt is mined and is exported. Imports in 1918, 67,411,794 francs, and exports in 1917, 50,324,846 francs. There is a large trade with Abyssinia and the exports of Abyssinia pass through the port of Djibouti. Trade with Abyssinia formerly by way of Zailah has lately been by rail from Djibouti to Addis Abeba. The local budget for 1919 balanced at 2,370,300 francs. The colony is under a governor who is assisted by an administrative council.

FRENCH WEST AFRICA. A possession of France in western Africa composed of the following colonies and territories: Senegal, population in 1917, 1,144,621; Guinea, 1,812,579; Ivory Coast, 1,562,023; Dahomey, about 900,000; Upper Senegal-Niger, 850,094; Mauritania, 256,164; Upper Volta, a region formed out of the southern part of Upper Senegal-Niger, by decree of March 1, 1919, with an area of about 95,000 square miles and an indeterminate population. The total area is in the neighborhood of 2,000,000 square miles with a population of about 12,000,000 to 13,000,000. No later figures for commerce were available than those given in the preceding YEAR BOOK. The general budget for 1919 amounted to 33,732,000 francs. In peace times the military force numbered 13,500 of whom 1500 were Europeans, and the police force numbered 3000. The whole region is under a governor-general, whose headquarters are at Dakar, assisted by a council, and each colony is under a lieutenant-governor. There is a general budget for the whole country for the services common to all the colonies and there are separate budgets in each of

the colonies for their local needs. The Governor-General at the beginning of 1920 was M. Merlin, appointed in December, 1919.

Senegal is the oldest and most important of the above colonies in French West Africa. It lies to the north of the British colony of Gambia. There are superior technical schools, a normal school, a professional school, and other educational institutions at Dakar, and European culture has been extended considerably among the natives. The chief imports are cotton, food-stuffs, hardware, and coal, and the chief exports are peanuts, hides, rubber, and gums. The colony sends one deputy to the French Parliament.

French Guinea is situated on the coast between Portuguese Guinea and the British colony of Sierra Leone. Capital, Konakry. See FRENCH GUINEA.

French Ivory Coast, situated between Liberia and the British Gold Coast. Capital, formerly Bingerville, but in 1920 changed to Abidjan. The centre of education is Bingerville. Coffee and cocoanuts are cultivated, some gold is found, and mahogany is obtained from the forests. Vessels entering the ports in 1918 numbered 144 and had a tonnage of 228,877. The city of Abidjan is served by a railway 197 miles long and an extension of it was in process of construction in 1920. Telegraph lines connect the chief towns and extend to the adjoining colonies.

Dahomey extends from Togoland on the west to Lagos and Nigeria on the east, and northward to the French military territory. It has a coastline of about 95 miles. The products include corn, yams, potatoes, cotton, and palm-oil, and palm-kernels. The last two are the chief exports, along with corn and copra. There is a railroad from the port of Kotonu to Savé, a distance of 156 miles, and a new line was in process of construction in 1920. See DAHOMEY.

Upper Senegal-Niger lies to the south of the Algerian sphere. Capital, Bamako with a population of 8734. The products include peanuts, millet, corn, rice, cotton, cattle, rubber, gums, skins, and wool. There is a railway from Kayes to Koulikoro.

Mauritania was made a civilian territory in 1914. Its population consists chiefly of Moorish Mohammedans.

Upper Volta lies to the west of the river Niger and the Military Territory. Capital, Ouagadougou, with a population of 19,332.

The French West African government was authorized, under a law of Aug. 12, 1920, to contract for a loan of 167,000,000 francs for the construction of railways and improvements of port works in the French West African colonies.

FRIEDLÄNDER, ISRAEL. Jewish educator, killed by Bolshevik soldiers, July 5, while on a mission for the Joint Distribution Committee in the Ukraine. He was born in Russia, Sept. 8, 1876; educated at German universities; and was professor of Biblical literature and exegesis at the Jewish Theological Seminary in New York City. He was a member of many Jewish philanthropic and other societies, including the Jewish Distribution Committee of American Jewish Funds for Jewish War Sufferers. He published several treatises on Semitic philology and literature, translated Dubnow's *History of the Jews from the Russian*, and wrote *The Jews of Russia and Poland* (1915); *Past and Present* (1919), etc.

FRIENDS, RELIGIOUS SOCIETY OF. The Friends, commonly known as the Quakers, are

composed of four branches: Society of Friends (Orthodox) with about 100,000 communicants; Society of Friends (Hicksite) with about 20,000 communicants; Orthodox Conservative Friends (Wilburite) with about 4000 communicants; and Friends (Primitive) with about 100 communicants. The Society of Friends (Orthodox) is the largest and most active of these branches, and holds a Five Years' Meeting, quinquennial, composed of delegates from 12 of the 14 yearly meetings in the United States and one in Canada. The next Five Years' Meeting will be held in 1922 in Richmond, Ind. Special boards carry on the foreign and domestic missionary work of the denomination. The denomination supports nine universities and colleges, among which Haverford College, at Haverford, Pa., is the best known. The *American Friend*, and the *Friends' Intelligencer* are the best known publications. Headquarters of the society are maintained at Richmond, Ind.

The American Friends' Service Committee, which did such excellent work during the war, has continued to give aid to the afflicted peoples of Europe. At present there are about 90 workers in Poland fighting the typhus, and endeavoring to make the conditions more sanitary. In Vienna the Friends are establishing industries and trying to find work for the people. The Committee is anxious to start work in Russia and also in Mexico. Investigation of the conditions in Mexico is now under way, while military operations in Russia have so far prevented the admission of any workers. A call has been sent out for men and women to take jobs in this country among the prisons and the Indians. The work in Germany has been continued. At one time the Committee was feeding daily between 600,000 and 700,000 undernourished children in that country.

The Friends announce the gift of the Chalons Maternity Hospital, which was used throughout the war, to France, two Friends to be on the staff of the hospital permanently.

FRUITS. See HORTICULTURE.

FUEL. See CHEMISTRY, INDUSTRIAL.

FURS. See ALASKA.

GALDOS, BENITO PEREZ. See PEREZ-GALDOS, BENITO.

GALICIA. Formerly an Austrian province in the Austro-Hungarian Monarchy; bounded on the north by Poland, on the east by Podolia (Russia), and on the northeast by Volhynia (Russia); in the south it touches Bessarabia, and in the southeast it is separated from Hungary by the Carpathians. After the armistice its status was indeterminate, being one of the problems of the Peace Conference on account of the claim of Poland to Eastern Galicia. The Supreme Council decided, Nov. 21, 1919, to bestow Eastern Galicia on Poland under a mandate for a period of 25 years. This was subsequently modified by leaving the period of Polish control indeterminate. See WAR OF THE NATIONS.

GALLIENI, GENERAL. See FRENCH LITERATURE.

GALVAN, LUIS. Dominican diplomat, died at Washington, D. C., August 12. From June 24, 1918, to the time of his death, he was minister from the Dominican Republic to the United States. He had held various important posts in the diplomatic service, having been consul at Barcelona, Spain, the consul-general of the Dominican Republic in New York and at Madrid,

and chargé d'affaires at Washington. Though a young man he had already distinguished himself as a diplomat.

GAMBIA. A British colony and protectorate in West Africa at the mouth of the river Gambia. Area of the colony proper, four square miles; population, 800; of the protectorate, 4500 square miles, and population about 200,000. Capital, Bathurst on the island of St. Mary. In 1918 there were eight elementary schools aided by the government with an enrollment of 1481 and an average attendance of 371. The chief imports in 1918 were, aside from specie, cotton and cotton goods, and kola nuts, and the chief exports, aside from specie, were peanuts and hides. Over 93.8 per cent of the exports went to the United Kingdom, which contributed over 73 per cent of the imports. The total tonnage of vessels entered and cleared in 1918 was 282,066, almost all British; the revenue was £133,324, and the expenditure £88,703. Governor at the beginning of 1920, Sir Edward John Cameron.

GANGHOFER, LUDWIG. German author and playwright, died in Bavaria, July 25. He was born in 1855, the son of a celebrated Bavarian forester, and studied at the principal German universities. He published a volume of poetry in 1879 and in the following year wrote his first play in collaboration with Hans Neuert, *Der Herrgottschneider von Ammergau*, which won success on the stage and passed through many editions after publication. In 1881 two other dramatic successes followed: *Wege des Herzens* and *Der Anfang vom Ende*. This led to his appointment as dramatic writer for the Vienna Ringtheatre. He was one of the editors of the *Vienna Tageblatt* from 1886 to 1892. Among his later plays may be mentioned the following: *Der Besondere* (1890); *Die Fackeljungfrau* (1901); *Der Klosterjäger* (1892); *Die Martinsklause* (1894); *Der laufende Berg* (1897); *Das Gotteslehen* (1899); *Das Schweißen im Walde* (1899); *Der Dorfapostel* (1900); *Das neue Wesen* (1902); *Der hohe Schein* (1905); *Gewitter im Mai* (1905); also the plays *Der heilige Rat* (1912); *Die letzten Dinge* (1912); and *Der Wille zum Leben* (1913).

GARBAGE AND REFUSE. Utilization of garbage by feeding to hogs, long practiced more or less systematically and given a great impetus by war-time food conservation efforts, was continued during the year, but probably with considerable curtailment in cities where it had been taken up as a merely temporary measure. Feeding was continued in such large cities as Newark, N. J., Baltimore, Md., and Buffalo, N. Y., under the unique contracts noted in the 1919 YEAR BOOK, which yield to the city a price per ton for garbage delivered to the contractor based upon the average selling price per pound of live hogs on the Chicago market. Disposal by feeding was also continued in some other large cities, including Minneapolis and St. Paul, Minn., and St. Louis, Mo. Garbage utilization by reduction—for the recovery of grease and tankage, the latter being used as a fertilizer base—also continued in use in most of the large cities of the country that adopted reduction before the war and did not give it up for feeding to hogs under the influence of war conditions. At both Rochester and Syracuse, N. Y., municipal garbage reduction plants were under construction during the year, that at Syracuse being completed and put in operation. In each of these two cities

there had previously been a privately owned garbage reduction plant. At Toledo, Ohio, the city let a 10-year contract for garbage reduction at existing privately-owned reduction works. The city delivers the garbage to the plant and pays the company \$1.45 a ton for disposal and for washing the cans in which the garbage is collected and for maintaining about a mile of private road leading to the plant. Of two other bidders, one offered to pay the city \$1.26 for garbage delivered to a hog feeding plant 30 miles beyond the city limits and the other offered \$0.85 a ton for garbage delivered to a hog ranch 8 miles beyond the city boundary, but the city considered that the cost of haulage by truck and trailer equipment, particularly over country roads in winter, made the bid for reduction more advantageous. Philadelphia decided, late in the year, to take possession of the privately-owned garbage-reduction plant on Jan. 1, 1921, and to collect garbage, ashes, and rubbish in the two central districts of the city, the latter as a step towards the possible complete assumption of municipal collection after 40 years of contract work. Apparently few garbage incinerators or destructors were added to those previously in use, but a few small ones were built or contracted for. Toward the end of the year serious problems arose in connection with the future of garbage utilization both by feeding and by reduction. These difficulties were due to the sudden slump in the selling price of the grease from the reduction plants and of the hogs from the feeding plants almost to pre-war prices, while at the same time there was comparatively little reduction in the cost of the various supplies and the labor entering into garbage disposal. The reduction plants suffered more than those where feeding was practiced, owing to the much higher operating costs of the former. The reduction plants require for their operation large amounts of coal and of gasoline or other solvent besides much labor. There was comparatively little fall in the prices of these three elements in garbage reduction up to the end of the year. Those garbage disposal contractors whose contracts are on the sliding scale basis suffered less than those who were operating on a lump-sum plan—this is the case with nearly if not quite all the reduction contractors. Toward the end of the year the company having the contract for the disposal of the garbage of Boston by reduction offered to pay the city \$100,000 (the amount of its surety bond) if the city would cancel somewhat less than the remaining two years of the contract. The city not agreeing to do this, the company notified the city late in December that it would abandon the contract and shut down its work on December 31. It was expected that the city would take charge of the reduction works and sue the contractor for failure to fulfill the contract. Garbage disposal by incineration was also adversely affected by prevailing high prices but in the United States almost without exception garbage disposal by burning yields no revenue. Some 30 destructors of the British high temperature type have been built in the United States and Canada and most, if not all, of these have been provided with boilers and other equipment for generating steam in order that—as is common in Great Britain—the waste heat from the high temperature destructors may be used to produce steam which in turn will generate electricity or pump water or sewerage. The steam is used for

all three purposes in England, though most commonly for generating electricity. In the United States almost if not quite the only places where any considerable amount of refuse destructor heat is utilized commercially are Savannah, Ga., where steam is piped to the closely adjoining water-works pumping station, and at Milwaukee, Wis., where the steam drives turbines which generate electricity which is transmitted to a pumping station connected with the city sewerage system. In Canada, at Westmount, Que., refuse destructor heat is used at the electric light plant. Most of the American garbage burning plants are of the medium or low temperature type which, though requiring less capital for construction than the high temperature type, produce no heat for utilization. In view of the conditions outlined in the foregoing statements, the garbage disposal at the close of 1920 was beset with uncertainties. The future of construction and operating costs could not be predicted with confidence, but the indications were that they would remain high, regardless of the system of disposal, for some months, if not for a few years. The revenue from the two utilization processes had fallen heavily and under American conditions there is hardly any revenue from incinerating or destructor plants. Consequently the argument was for slowness in making changes in systems of garbage disposal that were giving a fair degree of satisfaction and, where the construction of a new plant seemed imperative, that the method chosen should be the one that would produce sanitary results at the lowest outlay and operating costs, taking into account the possibilities of revenue to offset a part of the total annual expense. If a new plant were decided on, indications were that garbage disposal by feeding to hogs should receive careful consideration. Feeding produces a revenue to help offset cost and requires a capital outlay below that for a reduction plant; moreover, the greater part of the capital investment is liquid or can be turned into cash by the sale of the hogs whenever for any reason this method of disposal has to be given up. Engineers engaged in garbage and refuse collection and disposal studies and in the collection and disposal of ashes and miscellaneous refuse as well, gave much attention during the year to the use of motor vehicles instead of horsedrawn vehicles for collection and also to the possibility of the employment of both, using horsedrawn vehicles for house-to-house collections from which the horses could be detached in order that the loaded wagons might be drawn by tractors to the point of either final disposal or the shipping station for transfer by rail to the disposal works. The consensus of engineering opinion still is that for house-to-house collection motor vehicles are not usually economical but that in many places they may be advantageously used for long hauls after the garbage has been gathered from houses and transferred at central loading stations. Where garbage is utilized, either by feeding to hogs or by reduction, it is important that all the garbage produced in the community be available for this purpose, especially the richer garbage from hotels, restaurants, and apartment houses. The right of municipalities to compel householders and hotel and restaurant proprietors to turn over their garbage to the city or to a contractor collecting the garbage for the city is often resisted, especially in the case of the richer garbage from hotels and restau-

rants which can be sold to various private collectors. During the year the State Supreme Courts of Missouri, Michigan, and Utah sustained the validity of contracts for garbage disposal that entitled the contractor to all the garbage produced in the city, thus overruling the contention that the garbage in question was private property. The cities involved are Joplin, Mo., Grand Rapids, Mich., and Salt Lake City, Utah. Abstracts of the decisions were given in "Public Health Reports" (United States Public Health Service, Washington) for May 28, June 4, and June 18, 1920. In the Grand Rapids case, the Supreme Court held, according to the abstract already cited, "that the city had the right to regulate the disposal of garbage and the plaintiff was compensated for any loss in the common benefit secured by the ordinance." Under an ordinance passed by the city council of Seattle during the year the city reserves to itself the exclusive right, either for itself or authorized agents, to collect garbage within the city. The ordinance authorizes the board of public works to let a contract for garbage collection and disposal for any portion of the city for a period of not over five years. The ordinance was regarded as essential to give the city control over hotel and restaurant garbage, both as to collection and to disposal, the latter on hog ranches.

Details of experience with the operation of several plants for the utilization of garbage may be found in *Engineering News-Record* during the year 1920, as follows: A summary of the first year's operation of the reduction plant at Washington, D. C., under municipal ownership, May 6, and a second article on garbage disposal in Washington, December 2; experience with feeding garbage to hogs at Salt Lake City, written by the president of the contracting company, May 13; a detailed statistical summary of nine years' operation of municipally owned garbage reduction works of Columbus, Ohio, November 18. See also the same journal for December 16th for an account of experience with rubbish collection at Washington, D. C.

GARDENING. See HORTICULTURE.

GARLAND, MAHLON M. Congressman, died at Washington, D. C., November 19. He was born at Pittsburgh, Pa., May, 1856, learned the trade of iron worker, and was president of the Amalgamated Association of Iron, Steel, and Tin Workers from 1891 to 1898. In 1898 he was appointed Collector of Customs at Pittsburgh and was subsequently reappointed to that office, but resigned in 1915. He was a member of the Select Council of the city of Pittsburgh and of the city school board, and he was member of Congress, 1915-19. In politics he was a Republican.

GARRIGOU, FELIX. French physician, died at Toulouse in the spring. At the time of his death he was professor in the faculty of medicine and director of the Institute of Hydrology in that city. He had devoted a large part of his life to the study of the mineral waters of France and the exploitation of the warm baths. His writings on the subject were regarded as authoritative and were crowned on several occasions by the Institute and by the Academy of Medicine.

GARTHE, LOUIS. Newspaper correspondent, died at Washington, D. C., September 8. He was born at Baltimore, Md., Sept. 10, 1861; graduated at Baltimore City College, 1879; and studied afterwards at Johns Hopkins University. In 1888 he established the New York Bureau of

the Baltimore *American* and spent six months of that year abroad. He was the representative of the *American* in Washington. After 1899 he was frequently dispatched on missions for the paper in Cuba and South America and for work in the national campaigns. His newspaper work covered a wide range and was very voluminous.

GARVEY, EUGENE A. Roman Catholic bishop, died at Altoona, Pa., October 22. At the time of his death he was bishop of the Altoona diocese which office he had held since 1901 when the diocese was created. He was born at Carbondale, Pa., Oct. 6, 1845, and graduated at St. Charles Seminary, Philadelphia. After officiating in the towns of Hawley and Athens, Pa., he became pastor at Williamsport, Pa., in 1871, and continued to officiate until 1899.

GARVICE, CHARLES. British author, died at Richmond, March 1. He was born in 1833. He wrote for the newspapers for many years but finally discovered a remarkable ability for writing popular stories and in 1898 published his first novel, *Just a Girl*, which became one of the most popular stories of the day. His works were not of a high literary quality, but caught the mood of the moment and were immensely successful. He also wrote a volume of poems and a play, *The Fisherman's Daughter*, which had some success. Among his other novels may be mentioned: *In Cupid's Chains*; *Love Decides*; *Linked by Fate*; *A Girl of Spirit*; *The Gold in the Gutter*; *Queen Kate*; *Two Maids and a Man*; and *The One Girl in the World*.

GARY, JAMES ALBERT. Postmaster-General under President McKinley, died at Baltimore, Md., October 31. He was born at Uncasville, Conn., Oct. 22, 1833, and studied at Allegheny College, Pa. In 1861 he became his father's partner in the manufacture of cotton duck and was the head of the firm from 1870 until a short time before his death, when he turned over the business to his son. He was nominated by the Whig party for the Maryland Senate in 1858 and he was delegate to the Republican National conventions from 1872 to 1896 inclusive with the exception of the convention of 1888. As Postmaster-General during the greater part of McKinley's term he introduced the movement for the establishment of postal savings systems.

GAS ENGINES. See INTERNAL COMBUSTION ENGINES.

GASOLINE. See AUTOMOBILES.

GAS WORKS. See MUNICIPAL OWNERSHIP.

GASZTOVITT, WENCESLAS. Polish patriot and teacher, died in France in the spring. He founded the *Polish Bulletin* in France and continued to edit or contribute to it for 46 years. He was known as the most Polish of the French, and the most French of the Poles, and he did much to promote good will between the two countries during his long career. He was said to have been particularly fortunate in his prediction of the future. He taught for many years at the University of Sorbonne where he conveyed to the French student a knowledge of Polish literature by means of translations. He took part in the Polish insurrection of 1863, and he fought for France in the war of 1870. He always believed in the ultimate restoration of Poland, often quoting the lines of the poet on the subject of Poland to the effect that no nation died unless it wished to die.

GATES, ELLEN M. HUNTINGTON. American hymn writer, died in New York City, October

20. She was born at Torrington, Conn., about 1834 and married Isaac E. Gates whom she survived. Among the best known hymns that she wrote were those entitled *Eternity* which was translated into many languages and is said to have been the favorite hymn of President Lincoln; *The Home of the Soil*, and *The Prodigal Child*. She also published the collections, *Treasures of Kurium* (1897) and *To the Unborn Peoples* (1910).

GAYLEY, JAMES. Manufacturer and metallurgist, died, February 25. He was born at Lockhaven, Pa., Oct. 8, 1855, and graduated in engineering at Lafayette College, subsequently receiving degrees from the universities of Pennsylvania and Lehigh. After serving as manufacturing chemist and as superintendent of blast furnaces he became a managing director of the Carnegie Steel Company, holding that office until April 1, 1901, and was then made first vice-president of the United States Steel Corporation (1901-09), having charge of shipping and transportation. He invented a number of important devices in metallurgical work and received a medal for the invention of a dry air blast. He was director or member of various important manufacturing and scientific institutions, and was president of the Institute of Mining and Engineering.

GEMS AND PRECIOUS STONES. The great prosperity evident in the United States in 1919 had its effect in the production and importation of various gems and precious stones, which later of course felt the deflation and turn of the commercial tide in 1920. In 1919 there were imported into the United States precious stones and pearls valued at \$105,273,543 and in the first nine months of 1920 the demand continued with but slight decrease so that the imports were valued at \$63,185,739 or a larger amount than in any previous similar period with the exception of 1919. In fact only imports of diamonds and pearls decreased, as the other precious stones increased by nearly \$4,000,000. Inasmuch as 95 per cent of the world's diamond production was controlled by the De Beers Mining Company the output was very sensitive to the slackened demand and production was curtailed rather than prices lowered. The production of pearls was showing a natural decrease and as a result any marked decline in values of these and other precious stones did not occur in 1920 and was not anticipated later. The conditions in the diamond industry have been referred to elsewhere (see DIAMONDS), but there were also interesting developments as regards other precious stones which were summarized by George F. Kunz of New York in a brief but comprehensive review for the Annual Number of the *Engineering and Mining Journal*. According to Mr. Kunz sapphires were in greater favor in 1920 and brought higher prices than ever before. In the previous 20 years the United States had been a factor in their production and some \$2,000,000 worth of sapphires had come from Montana. Queensland, Australia, and Burma also produced many sapphires. The Burmese mines continued to supply the bulk of the world's rubies. Two new gem minerals aroused increased interest in 1920. Scapolite, yellow, transparent, and of gem quality, was found by Lacroix, together with beryl, euxenite, and monazite, in a potash-pegmatite at Tsarasaotra, Madagascar. Fibrolite (sillimanite), susceptible of being cut into gems, was

found in Burma and Ceylon. A new and interesting find of precious turquoise was announced during the year from Argentina. Jade, the rich green variety of jadeite from Burma, in 1920 was mined to a greater extent than previously and figured in much jewelry. California as usual, produced a number of the minor gems, such as tourmaline, kunzite, and beryl. A new and promising opal field discovered in 1915 at Stuart's Range, South Australia, and in 1920 still another good field which was found in Tintenbar, not far from Sydney, New South Wales provoked interest. In the United States the opals from Nevada, having a large water content, were chiefly of value as mineralogical specimens.

GENETICS. See ZOOLOGY.

GEOGRAPHICAL SOCIETY, AMERICAN.

A society organized in 1852 for the furtherance of geographical research. From November, 1917, to December, 1918, the Society was the headquarters of the body of experts known as the Inquiry, which later attended the Peace Conference and served on the various territorial and economic commissions. In 1919 the Society conducted an economic survey of the boundary between Guatemala and Honduras, which governments desired a technical study to be made as the basis for a recommendation by the Secretary of State for a final boundary in the disputed region. In 1920 the Society adopted as the chief part of its programme a plan of intensive research in the geography of Hispanic America. The results will include monographs, articles, hand books, and maps; and among the last named is the millionth map of Hispanic America in approximately 100 sheets. A feature of the year was the awarding of the David Livingstone Centenary Medal to Dr. Hamilton Rice. The Society publishes a quarterly magazine, the *Geographical Review*. It is a scientific periodical, giving the latest information in the fields of geographical research and exploration. It also contains a record section dealing with the geographical events throughout the world, and a review section covering the whole field of geographical literature. In addition, the Society publishes a Research Series consisting of monographs, of which normally one each year is sent free of charge to each Fellow of the Society. The officers for 1920 were: President, John Greenough; vice-presidents, James B. Ford and Philip W. Henry; foreign corresponding secretary, C. Redmond Cross; recording secretary, Hamilton F. Kean; treasurer, Henry Parish. The Society has its headquarters at Broadway and 156th Street, New York City, and Dr. Isaiah Bowman is the director.

GEOGRAPHIC SOCIETY, NATIONAL. A national scientific organization, with headquarters in Washington, D. C., founded in 1888 "for the increase and diffusion of geographic knowledge." The former is done through its expeditions and the latter principally through its organ, *The National Geographic Magazine*. During the year 1920 its principal scientific undertaking consisted of a reconnaissance survey of the Chaco Valley, N. Mex., the most densely populated portion of North America in pre-Columbian times. The purpose of this survey was to determine the advisability of a complete archaeological survey of that important centre of primitive Pueblo culture. In the Chaco Cañon are located the vast communal houses of Pueblo Bono and Chetro Kettle, around which are significant remains showing that the Pueblo Indians developed pot-

tery and other arts to their highest point. The scientific members of the sixth expedition to the Katmai, Alaska, region, under the leadership of Prof. Robert F. Griggs, presented their reports to the Society. One of these, made in conjunction with the Geophysical Laboratory of the Carnegie Institution of Washington, points to a possible revision of our present knowledge of the forces of vulcanism. It shows that in the great Katmai eruption the lava had a temperature of less than 1000° C. as it rose to the throat of the volcano; that this lava did not flash up in explosive form immediately on reaching the surface of the earth; but that it first brought to a molten state perhaps a cubic mile of rock in the mountain, after which came the terrific explosion. The problem of accounting for the vast accessions of energy necessary for the observed transformation has not yet been solved, but it is being pursued with vigor by the Society's representatives. Studies were also continued with reference to the revegetation of the raw mineral "soils" thrown out by the volcano, in the hope that they would throw light on the problems of soil biology of much importance to practical agriculture. The zoologist of the expeditions, Prof. James S. Hine, secured a very extensive collection of insects in Alaska, many species new to science being represented among them. The Katmai expeditions also discovered a spacious haven, which was named Geographic Harbor, in an area shown on the last chart as dry land. This harbor affords easy access to the New Katmai National Monument with its remarkable Valley of Ten Thousand Smokes. In the country north of the park four large and beautiful lakes, ranging from 3 to 30 miles in length, were discovered and named Lake Grosvenor, Lake Coville, Lake Brooks, and Lake Grant. The Society made possible the erection in Arlington National Cemetery of a permanent monument to the memory of Admiral Charles Wilkes, the discoverer of the Antarctic Continent. The grave of America's foremost South Polar explorer was hitherto unmarked. During the year the home study course of current events geography was extended through the newspapers until it now reaches 12,000,000 people. This course is translated into 17 languages through the Bureau of Foreign Language Information Service of the American Red Cross. In addition thereto, in coöperation with the United States Bureau of Education, the Society is furnishing current events geography material to 70,000 teachers and through them to 3,000,000 school children. The service has also been extended so as to provide for similar material on Bible lands, to serve as a background of information for the Sunday schools and Bible classes. The visual educational activities of the Society included the publication of a large number of pictorial geography sets, some 12,000 of which were distributed among the schools of the country. The membership of the Society is now approximately 750,000, making it numerically the strongest scientific organization in the world. Its president, Rear-Admiral John E. Pillsbury, having died Dec. 30, 1919, Gilbert Grosvenor, formerly director and editor, was elected president.

GEOLOGY IN 1920. The year 1920 was not marked by any startling developments affecting the principles of geology, but on the other hand, the public interest was unusually keen on geological matters and this is undoubtedly one of the important items in the history of the science

for the year. This interest was chiefly concerned with the oil supplies of the world and in particular with those supplies available for the United States. A large part of the interest was undoubtedly inspired by the statements of George Otis Smith, Director of the United States Geological Survey, who repeatedly placed before the public the precarious situation in respect to future supplies of oil. He emphasized the fact that upon the geologist depends the discovery of new supplies necessary to maintain production at its present rate. To meet the needs of the increasing demand for petroleum products, new fields must be discovered. Sources for such an increased supply were not considered as likely to be found within the United States as in foreign lands. Hence the most enterprising oil companies were investigating foreign fields, notably those around the Caribbean coast and in Peru, in South America, and the Mesopotamian, Persian, and Baluchistan regions. The political situations in these latter regions and in particular the endeavors of Great Britain to obtain exclusive control of them led to diplomatic correspondence between the United States and Great Britain which, among other things, stimulated the public interest in this branch of geology.

A very apparent though not wholly desirable reaction produced by the enhanced appreciation of the value of the geologists' services was the large number of resignations of geologists of the United States and other geological surveys. These men left the survey to take positions as oil geologists at greatly enhanced salaries. The survey was not alone in its experience but shared its loss with the college and universities, many of whose teachers of geology turned from the academic to the commercial world because of the enormous discrepancy between the salaries offered to men of like ability in the different spheres. This diversion of scientists to commercial work was undoubtedly immediately beneficial to the industry that employed them, but it created a very serious dearth in the supply of teachers. Even the future supply was threatened. This dearth should not be charged against the industries but against the public, which tacitly admitted, as measured by the relative salaries, that the man who can teach others to do important things is performing a less valuable service, though usually more arduous and exacting, than the one who serves private interests. In the past the discrepancy in favor of the commercial income was not so great as to counteract the attractions of academic life and opportunity to engage in research and publish the results of one's labors. The new public interest, coupled with the pressing demand of business, increased the number of students turning toward geology, thus overburdening the already reduced teaching forces. Nearly all, however, looked to the commercial or economic side and the natural source of supply for able teachers and research men was not kept up in the past year. Many excellent university positions for young men were either not filled at all or were temporarily filled by mediocre men.

The year was marked by the publication of a few important books. Perhaps the most important of these was Grabau's *Principles of Salt Deposition*. This is now the most exhaustive treatise on the origin and distribution of saline deposits and related substances. The vast importance of salt occurrences was brought home

to the general public by the straits in which the world found itself owing to the German control of potash during the war. The book therefore was very timely besides being comprehensive and thorough.

Another book of unusual interest was *Political and Commercial Geology and the World's Mineral Resources*, edited by J. E. Spurr. This book gives a *précis* of the geographic distribution and the commercial and political control of the world's mineral resources. The fortunate position of the British Empire in respect to the control of the supply of certain key minerals such as tin, gold, asbestos, and nickel is well brought out, as well as the unique position of Germany in regard to potash. In most respects the situation of the United States is shown to be commanding. She is well supplied with vast resources of the useful metals such as iron and copper and has the greatest reserves of coal. The book is a most admirable reference as to the political control of the world's mineral resources and supplies the public with another outlook on the territorial disputes that had arisen at the conclusion of the world war.

Two text books on physical and dynamic geology appeared. The first was the second edition of Part I of Pirsson and Schuchert's *Text Book of Geology*. While maintaining all its virtues of concise and lucid statement, which made it so desirable a medium for the instruction of the elementary student, much new material was added and the errors that disfigured the original edition were eliminated. The revision appeared posthumously, Professor Pirsson having died Dec. 8, 1919, leaving American geology impoverished by the loss of a very eminent petrographer and a highly successful teacher. The other textbook was Grabau's *Text Book of Geology*, Part I, "General Geology," which came out in December. A more exhaustive treatment than Pirsson's removes this book from the class of elementary textbooks and places it among such as Geikie's textbook and of Haug's and de Lannay's treatises on geology. In periodical literature mention must be made of Barrell's posthumous memoir on the "Piedmont Terraces of the Northern Appalachians" (*A.J.S.*, April-June 1920), in which Barrell supports the thesis that the terraces were produced by marine planation and are not fluvial peneplains. Aside from the great interest in the problem as a study in regional physiography, the memoir was of extreme importance for its discussion of the principles involved in the interpretation and the competence of the forces postulated, as presented by one of the most profound and brilliant of modern geologists.

In the *Journal of Geology* there continued to appear T. C. Chamberlin's articles on "Diastrophism and the Formative Process." These papers were an elaboration of the planetesimal hypothesis. The articles are of world-wide interest because they treat of the most profound principles and are written by the best-known and ablest of the present-day philosophical geologists. Among other misfortunes American Geology has to record the loss of J. P. Iddings, her most illustrious petrographer, a pioneer and one of the foremost of the authorities on igneous rocks in the world.

GEORGETOWN UNIVERSITY. A Roman Catholic institution of the higher learning at Washington, D. C., founded in 1789. For the fall session of 1920 there were 2143 students en-

rolled. The faculty numbered 231. The library contained 120,000 volumes. It is under the direction of the Jesuits. The recent gifts are as follows: \$30,000, a Morgan endowment for the Department of American History; \$40,000 for the Riggs Building of the Georgetown University Hospital given by Francis and T. Laureson Riggs. A new school of Foreign Service has been formed, and various new courses have been instituted. President, John B. Creeden, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY.

A non-sectarian co-educational institution of the higher learning, at Washington, D. C., founded in 1821. For the summer session of 1920, there were 1054 students enrolled and for the fall session 2545. The teaching staff numbered 249. The endowment of the university amounted to \$457,636 and the income for 1919-20 was \$460,169. There were 55,000 bound volumes in the library and 10,000 pamphlets. A new Law School building was purchased and equipped during the year. President, William Miller Collier, L.H.D., LL.D.

GEORGIA. POPULATION. According to the preliminary report of the census of 1920, there were 2,895,832 residents in the State, Jan. 1, 1920, as compared with 2,609,121 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 310,737, an increase of 6.8 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Prod. Bu.	Value
Corn	1920	5,100,000	76,500,000	\$80,325,000
	1919	4,820,000	69,890,000	111,874,000
Oats	1920	550,000	11,550,000	12,474,000
	1919	500,000	10,000,000	11,500,000
Wheat	1920	211,000	2,110,000	5,064,000
	1919	240,000	2,520,000	6,228,000
Rye	1920	29,000	290,000	609,000
	1919	33,000	294,000	800,000
Tobacco	1920	26,700	16,020,000	5,927,000
	1919	31,000	16,430,000	3,532,000
Hay	1920	672,000	6771,000	18,052,000
	1919	612,000	6673,000	17,068,000
Rice	1920	1,100	29,000	65,000
	1919	1,200	29,000	80,000
Peanuts	1920	224,000	7,616,000	9,368,000
	1919	202,000	5,050,000	12,423,000
Potatoes	1920	22,000	1,628,000	3,386,000
	1919	23,000	1,610,000	3,494,000
Sweet Pota.	1920	148,000	13,764,000	13,351,000
	1919	142,000	13,064,000	14,370,000
Cowpeas	1920	110,000	990,000	2,148,000
	1919	220,000	990,000	2,376,000
Cotton	1920	4,958,000	1,400,000	107,000,000
	1919	5,220,000	1,660,000	297,056,000
Sorg. Sirup.	1920	15,000	1,410,000	1,466,000
	1919	16,000	1,472,000	1,501,000

a Pounds. b Tons. c Bales. e Gallons.

See AGRICULTURAL EXPERIMENT STATIONS.

EDUCATION. In 1918 the enrollment in the public schools was 679,747 and the average attendance 452,064; teachers numbered 15,172.

TRANSPORTATION. The total railway mileage was 7436.

FINANCE. According to the latest available figures, the budget was \$9,500,000 and the net debt, \$5,718,202.

GEORGIA, REPUBLIC OF. Formerly a part of the Russian Empire; in 1920 an independent republic; situated in Transcaucasia between the Black and Caspian seas, bounded on the north by the Caucasus, on the east by Azerbaijan, on the south and southwest by Armenia and Turkey; capital, Tiflis. It is divided into nine provinces of which the total area is 35,000 square

miles, with a population in 1915 of 3,176,156. The chief cities are Tiflis, 346,766; Kutais, 85,151; Sukhum, 61,974; Batum, 25,020. Elementary instruction is free and compulsory from the ages of five to 11. There is a university at Tiflis, founded in 1918, which has six faculties, namely, medicine, philosophy, law, agronomy, literature, and science. It had 45 professors and 1500 students (1919). The chief interest is agriculture and the chief products include wheat, barley, cotton, corn, tobacco, tea, and wine. The wine industry is especially important. The country is well adapted for cattle-breeding and the livestock is plentiful. Among the minerals produced are copper ore, coal, naphtha, lead, zinc, manganese ore, iron ore, and sulphur. The manganese industry is the most important. The following report on conditions in 1920 was supplied by the United States Bureau on Foreign and Domestic Commerce:

PRODUCTION. The population of Georgia is divided into three classes: (1) The remnants of a feudal aristocracy (the well-known Caucasian princes, the title "prince" being a translation of the Russian word "knyaz," or chieftain, denoting in general practice a landholder); (2) the bourgeoisie of the towns, principally shopkeepers and merchants, most of those in Tiflis being of the Armenian race, though Georgian merchants do inhabit the smaller towns; (3) a peasantry largely of Georgian stock, engaged in agricultural pursuits and the raising of sheep and cattle. While this population is more or less racially solid in character, the Georgians are divided into a number of separate tribal stocks, each of which has its peculiar customs and in some cases its distinct language. The principal groups are Georgians proper, Mingrelians, Ossetines, Hevsurs, Abkhazians, and Emertines. Of these the Emertines constitute the largest racial group and have more energy and executive ability than the other tribes. Property formerly belonging to the Russian government has been declared the property of the republic, and the Georgian language, formerly in common use only among the peasants, has been declared the official language. Owing to years of disuse, it is somewhat undeveloped, but in recent months it has been introduced into the schools and adopted in governmental correspondence. At the beginning of 1919 the Caucasus was still occupied by British troops, with headquarters at Tiflis, a considerable force at Baku, and detachments at the larger points along the railway. The occupation lasted until Aug. 15, 1919. About 90 per cent of the population of Georgia is engaged in agricultural pursuits, but during the century of Russian occupation the superior productivity of the Russian steppes made itself so manifest that the raising of food grains in Georgia gradually declined until the Caucasus came to depend almost entirely on Russia for wheat, rye, and oats. The principal grain crop at present in Georgia is corn. Since the separation of Georgia from Russia the importation of grain from north of the Caucasus range has stopped, and renewed attempts have been made to grow food grains. In 1919 a larger area was sown to grains than ever before: the average increase in all districts over the 1917 area was approximately 20 per cent. The Georgian peasant population possesses all the characteristics of oriental peoples and opposes Western innovations. Agriculture is carried on to-day as it was 100 years ago. Plowing is performed by

means of steel points attached to a crooked bough or log and drawn by sometimes as many as 10 teams of oxen, and this primitive method persists in spite of the excellent modern examples furnished them by the various German and Swiss colonists scattered throughout the agricultural districts. Agricultural efficiency is further retarded by the post-revolution land distribution, which took place in practically all parts of the country. In many districts the peasants themselves took over the lands from the great landholders without supervision and divided them, in others government officials supervised the allotments. The maximum of land allowable for any one family is 7 dessiatines (about 17 acres). Some of the more highly cultivated estates have been kept intact; the government has confiscated them, and they are rented out, sometimes to their former owners. The year 1919 was very unfavorable to crops. The spring was late and the summer characterized by incessant rains, which changed toward autumn into devastating hailstorms, that destroyed the crops in several districts. The total crop of grains of all kinds, principally oats, barley, maize, and millet, in the Tiflis government for 1919 amounted to 7,154,863 poods (1 pood = approximately 36 pounds). The needs estimated by the statistics committee of the ministry of agriculture were as follows: For seed, 2,182,747 poods; for feeding the population, at the rate of 15 poods per head, 16,583,610 poods; for feeding live stock, at an average of 7 poods per head, 402,080 poods. For 1920 the estimates of the food supply of Georgia showed a deficit of 12,086,626 poods of grain foods in the Tiflis government alone. Figures for the government of Kutais, next in importance after the Tiflis government, showed a total production of 5,620,185 poods, with estimated needs of 15,252,046 poods, indicating a general deficit in this district of 9,632,715 poods.

COMMERCE. In the total trade of Georgia with Azerbaijan in 1919, imports were valued at 297,305,266 rubles, and exports at 180,770,530 rubles; with Armenia and the neutral zone, imports were 32,177,003, and exports 87,683,080 rubles; with Russia, imports were 137,889,223 rubles, and exports 29,394,361 rubles; with Batum and Western countries, imports were 395,665,364 rubles, and exports 96,129,265 rubles.

COMMUNICATIONS. The railway system in 1919 covered about 970 miles, of which 556 were on the main line from Batum via Tiflis to Baku. The Transcaucasian Railway before the Russian revolution was a single system comprising a direct line from Batum, on the Black Sea, to Baku, the port of the Caspian Sea, and a branch extending from Tiflis southward through Alexandropol to Kars and Erivan, but it was later split up among the three Caucasian states. At the time of the dissolution of the Transcaucasian cabinet each new government seized such rolling stock and railway materials as were within its borders and claimed them for its own. During 1919 the British controlled the short stretch of the railway from Batum to Notanebi, where the Georgian customs took over control. From this point to the little station of Poiili, where the main line crosses the Kura River, and on the southern branch from Tiflis to Sinaeen, Georgia operated the railway. Azerbaijan controlled the main line from Poiili to Baku, and Armenia the remainder of the southern branch. The larger part of the rolling stock happened to

be in Georgia, where the Russians had also built the main repair shop, in Tiflis. Azerbaijan owned all the crude petroleum used as fuel for the locomotives, but very few locomotives, and most of those were badly in need of repairs. Armenia, without either fuel or repair shops, fell into possession of but four locomotives and a small number of cars. Batum, at the end of the great pipe line from the oil fields of Baku, is of vital importance to international shipping. Several lines of steamers opened a regular service to Batum in 1919, the principal ones being the Paquet Line from Marseilles, the Cunard Line from British ports, the Italian Lloyd Trentino, and the Green Star Line from New York. The chief ports are Batum and Poti, the former being the terminus of the Transcaucasian Railway and of the oil pipe line from Baku.

GOVERNMENT AND HISTORY. The independent government of Georgia dates from the Bolshevik revolution. The Georgians formed along with the Armenians and the inhabitants of Azerbaijan the federal republic of Transcaucasia of which Tiflis in Georgia became the capital. The Diet of Transcaucasia declared this union an independent federal state, April 22, 1918. The constituent parts, however, soon split off (see ARMENIA and AZERBAIJAN), and Georgia declared its independence at Tiflis, May 26, 1918, which act was ratified by the constituent assembly, March 12, 1919. The new government was recognized by the Allied Powers, Jan. 16, 1920. The executive power was vested in a cabinet of ministers, chosen from the constituent assembly, under a president who acted provisionally as the supreme head of the state. The constituent assembly in 1920 was working out the organic law. In the provisional government, the ministers were responsible to the Assembly and the Senate was nominated by it. All the officers of the state were under the control of the Senate. The dominating political party in the constituent assembly was Social Democratic. The president of the cabinet at the end of 1920 was M. Jordania.

The note of the American Secretary of State addressed to the Italian ambassador in regard to the United States foreign policy gave offense to the authorities of Georgia by its reference to the republic as a "so-called state" and as the "illegitimate child" of Great Britain. The Georgian Minister of Foreign Affairs protested against these terms and emphasized the fight that his country had made against Bolshevism. He pointed also to the democratic principles on which the government rested. He declared that the independence of the country would be maintained and that it would remain neutral against the Soviet government, or any other aggression. At this time (September 10th) a British labor delegation was investigating conditions in Georgia.

GEORGIA, UNIVERSITY OF. A State institution of the higher education, at Athens, Ga., founded in 1801. There were 1031 students enrolled in the summer session of 1920 and in the regular fall session there were 1132. The members of the faculty numbered 70. The income for the year amounted to \$375,000. The library contained 42,500 volumes. President, David C. Barrow, LL.D.

GEORGIA SCHOOL OF TECHNOLOGY. A State institution of the higher education, at Atlanta, Ga., founded in 1888. There were 2224 students enrolled for the fall session of 1920, including 209 night school students, 240 in the

special courses for rehabilitation. The faculty numbered 100. The income for the year amounted to \$240,000. There were 15,000 volumes in the library. A new power station and engineering laboratory were added to the school plant, and an addition was made to the mechanical engineering building. President, K. G. Matheson, LL.D.

GERMAN COLONIES. The over-sea dominions of Germany were attacked by the Allies at the beginning of the war, and before the war was ended the conquest was complete. They consisted in Africa of the colonies of German East Africa (q.v.), Kamerun, Togo, and German Southwest Africa; in the Pacific of New Guinea with the Bismarck Archipelago, the German Solomon, Caroline, Marianne, Pelew, etc., islands (see GERMAN NEW GUINEA), and German Samoa (q.v.); and in the Far East, Kiaochow (q.v.). Total area, 1,140,117 square miles; total population, 13,258,000. Their destination was determined by the Treaty of Versailles. For the discussion of which the subject gave rise, see the article WAR OF THE NATIONS.

GERMAN COLONIES IN AFRICA. On October 1st, the German territories of Kamerun and Togo were officially turned over to France. The larger part of the territories had already been occupied by the French, but a small portion was still held by the English under the terms of the agreement between France and England of July 10, 1919. The present situation is based on articles 22 to 119 of the Treaty which obliged Germany to give up her colonies and at the same time formulated the rules for their government. According to the decision of the Supreme Council May 7, 1919, the mandates for the German colonies were distributed between the two Allies, and the Franco-British agreement of July 10, 1919, completed the details. It was not clear whether the French now held Kamerun and Togo by virtue of a mandate or as sovereign. From the moment that France had resolved to apply the principles of the League of Nations she appeared to be bound by the duty of the mandate provisions. A new administrative organization was at once begun in the two colonies. Kamerun was provided with a separate budget consisting of two parts: First, the general budget, and second, the railway budget. Courts of the first instance were created for the two colonies by decree and a council of administration framed on the model of those which functioned in French West Africa was established providing for representation of the natives. In both colonies postal systems were set up. The customs system established in French Equatorial Africa in 1912, was applied to the Kamerun. This was based on the principle of commercial equality. As to the payment for German property it was decided to sell it at open auction to foreigners as well as Frenchmen while reserving the rights of the state in matters pertaining to the public domain.

GERMAN EAST AFRICA. Before the war a German protectorate; now for the most part under British administration and known as the TANGANYIKA TERRITORY: lying to the south of British East Africa and extending from Lakes Victoria Nyanza, Tanganyika, and Nyasa to the Indian Ocean: with a coast line of about 620 miles. Area, estimated at 384,180 square miles; population estimated, Jan. 1, 1913, 7,659,898, of whom the whites were placed at 5366. In regard to education and production no later figures were

available than those given in preceding YEAR BOOK. Exports, 1918-19, £700,000, and imports, £1,008,000. The chief exports were cotton, sisal, hides, and copra, and the chief imports, cotton piece goods, etc., rice, food-stuffs, sugar, and tobacco. British troops completed the conquest in 1918 and the status of the colony was subject to the Treaty of Versailles. As the conquest proceeded a civil administration was established and it was completed at the beginning of 1919 when the invading troops were withdrawn. According to the decision of the Supreme Council made public in March, German East Africa was divided between Great Britain and Belgium; the former receiving 366,000 square miles out of the total area of 384,000 square miles; while Belgium received the two northwestern provinces of Ruanda and Urundi. Kamerun and Togoland were divided between Great Britain and France as mandatories. The British portion was termed officially the Tanganyika Territory with headquarters at Dar-es-Salaam. The Belgian portion administered under the Royal Commissary of the Belgian government with headquarters at Kigoma comprised the provinces bordering on Lake Tanganyika. The area of the Belgian portion is estimated at about 19,000 square miles. The British civil administrator at the beginning of 1920 was Sir H. A. Byatt.

GERMAN EVANGELICAL SYNOD OF NORTH AMERICA. See EVANGELICAL SYNOD OF NORTH AMERICA.

GERMAN LITERATURE. The precarious economic condition of Germany and Austria has so far not materially affected their literary production. Especially striking has been the activity of the German stage during the past year. With astonishing frequency premières have taken place in almost every large theatre. The output of fiction has been as large as ever; that of verse has apparently suffered no diminution, and even new editions of standard authors have been quite numerous. The only outward sign that the German book market has not regained its pre-war status is the poor quality of the paper on which the new books are printed.

The general attitude of the year's literature also barely differs from that of its predecessors. Echoes of the war linger in many publications of that "explanatory" nature to which the world has become accustomed since the fatal year 1914. Even some of the academic signers of the famous manifesto of 1914 have still something to say in defense of their country's ruthless aggressiveness. Others are inquiring into the possibilities of a socialistic organization of society. Again others in gloomy despondence see nothing but ruin and wreckage ahead and limn realistic pictures of a return to primitive barbarism. Only a few voices tentatively strike a note which suggests the timid dawn of a spiritual renaissance.

DRAMA. In spite of the great activity of the theatres and the surprising number of new plays that were staged during the past season, not one proved a success making it a landmark either in the author's development or in the evolution of the German drama. Yet the greatest names in the history of contemporary German drama were represented among the many premières. Gerhart Hauptmann, who has recently become deeply interested in Mexico old and new, has written a play, *Der weisse Heiland*, which he very properly calls a dramatic fantasy; for the welding of the Christ story with that of Montezuma can

hardly be considered anything but an interesting experiment. As such it was regarded by the audience which attended the first performance in Berlin, and which by this time is accustomed to see the poet grope for the realization of some dream, which defies being firmly molded in the solid form of the drama. His *Hirtensied* was also presented this season, preceding the performance of Hölderlin's *Empedokles*, which was given on the 150th anniversary of the poet. Another dramatic work by Gerhart Hauptmann, the title of which sounds exotic enough, *Indipohdi*, was published in the *Neue Rundschau*. His brother Carl, who is given to elusive fancies even more than Gerhart, and also deliberately ignores what is considered indispensable in dramatic construction, had two new works performed: *Gaukler, Tod und Juwelier*, a five act drama, and *Der abtrünnige Zar*, a "legend" in six parts. Neither of the works had a decided success. Georg Kaiser achieved the distinction of being the first German dramatist to have a play performed in England since the war; the London Stage Society gave *Von Morgen bis Mitternacht*. Heinrich Mann, the novelist who has won the esteem of all right-minded people by his open disapproval of his country's attitude in the war figures in the theatrical annals of the year as the author of a three-act drama *Der Weg zur Macht*. Heinrich Lilienfein, who some years ago made a very successful début as a dramatist, but has met with failures since, was unable to imbue his five-act play *Die Überlebenden* with real vitality. Wilhelm Schmidthonn's *Der Geschlagene*, Walter Hasenclever's *Die Entscheidung*, Karl Riebesoll's *Leidenschaft*, Oscar Bendiner's *Der Renegat*, Karl Sloboda's *Die Pharisäer*, Paul Wertheimer's *Die Frau Rat*, in which Goethe's mother figures, Robert Precht's *Alkestis* which presents the classical problem in modern garb, Reinh. Zenz's *Lob der Nartheit*, a marionette play, Kurt Eisner's *Die Gottesprüfung*, a political farce, Alfred Brust's *Der ewige Mensch*, which strikes the Christ-motive, and Karl Neurath's *Der Bundschuh*, a five-act tragedy which derives its title from a German peasant uprising, had each little more than a *succès d'estime*. Two successful comedies were Heinrich Lautensack's *Die Pfarrhausköchin*, and Hermann Barsdorf's *Kramer Kray*, and *Am Glockenturm* by the Alsatian René Schickelé was credited with being written around an original idea. The purely historical drama was represented by Hermann von Bötticher's *Friedrich der Grosse*, the fairy drama by K. von Felner's *Roland's Knappen*. Hans J. Rehfish created some discussion with his three act tragedy *Das Paradies*, in which he has five survivors of the general débâcle of civilization following upon the war take up their abode in some mountain solitude and attempt to realize an Utopia, the experiment being financed by one of the members, an American, whose optimism nothing can shake. Another play that caused some talk was Fritz von Unruh's *Platz*, the second of his trilogy of the times begun in *Das Geschlecht*, and to be finished in *Der Taumel*. Of poetical dramas *Godiva* by Hans Franck was most highly spoken of by the critics, among them Stefan Zweig.

FICTION. The productivity of some German writers in spite of the distressing conditions that are said to prevail in the country is amazing. Carl Hauptmann has published two books of fiction within the year: *Der Mörder* and *Die Unwissende Stute*, the latter called a "legend";

his name figures also upon the title-page of a cleverly illustrated short story with American background: *Das Kostümgenie*. Heinrich Mann, too, has a novel to his credit, besides the play mentioned above; it is entitled *Die Ehrgeizige*. Hermann Hesse, who has for some years been living in Switzerland, has sent out two volumes: short stories under the title *Klein Garten* and *Demian*, *Geschichte von Emil Sinclairs Jugend*, a novel. Felix Philipp seems to have abandoned drama, his latest work being another story: *Monica Vogelsang*. The Swiss novelist Ernst Zahn has published a volume of short stories called *Helden des Alltags*. Carl Sternheim's new novel bears the suggestive title *Europa I/II*. In his book of short stories, *Der Wendepunkt*, Jacob Wassermann announces that a new form of narrative is about to evolve, more in harmony with the change in the spirit of the time. Clara Viebig, whose popularity makes her alarmingly prolific, figures in the year's fiction with the short stories entitled *West und Ost* and the novel *Das rote Meer*. Alfons Petzold, the Viennese poet, has sent out the novel *Das rauhe Leben*, the title of which suggests that he is still concerned with the grim tragedies of poverty. The poet-philosopher Bruno Wille has once more made an excursion into fiction in the volume entitled *Der Glasberg, Roman einer Jugend*. Johannes Schlaf, once the fellow-founder with Arno Holz of "naturalism" in German drama and fiction, but long since working along individual lines, has after some years of silence published a story called *Miele*. Ludwig Thoma's Bavarian story *Der Jägerloisl*, August Sperl's *Der Archivar*, Rudolf Hans Bartsch's *Ewiges Arkadien*, Rudolf Stratz's glacier story *Der weisse Tod*, Fedor von Zobeltitz's story of aristocracy during the revolutionary year, *Die von Scheibitz*, Alice Berend's book of middle-class Berlin, *Spreeman & Co.*, Karl Hans Strohl's *Attentäter*, Wilhelm Scharrelmann's *Selige Armut*, Rudolf Greinz's volume of legends *Die Pforten der Ewigkeit*, Raoul Auernheimer's short stories *Das ältere Wien*, Carl Busse's new book, *Fläumchen*, and Woldemar Bonsels's *Indienfahrt*, called a German *Junglebook*, have elements of popularity, though not of long lasting vitality. Johann Gilhoff's novel *Jörnjakob Suehn, der Amerikafahrer* is the typical story of a German-American immigrant, who on having acquired money and a home of his own, still does not feel an American, but considers himself bound to the fatherland. Armistice Day gives the title to Bernhard Kellermann's story *Der 9te November*, and *Ararat* by Arnold Ullitz is a weird story of the lapse into barbarism, which the war and Bolshevism have brought to his German hero and Russian heroine.

POETRY. While there are many volumes of verse by hitherto unknown authors on record, few of the older poets have produced new works. After many years of silence, Hugo Salus, practising physician in Prague, has given us the little volume entitled *Das neue Buch*. Hans Heinrich Ehrler's *Gedichte* is in the vein of his earlier work. Will Vesper's *Mutter und Kind* is a book full of tender feeling. Franz Werfel, who made his début shortly before the war as one of the strongest individualities among the younger poets, has attempted an ambitious task in the volume entitled *Der Gerichtshof*. Marie Madeleine, whose sensational success as a writer of erotic verse is still remembered, has after some years of silence sent out a new volume, *Taumel*,

which is slightly more moderate in tone and tempo. Julius Bab figures on the title page of two anthologies: *Die deutsche Revolutionslyrik* and *1914—der deutsche Krieg im deutschen Gedicht*.

LITERATURE, CRITICISM, ETC. No very important work has been added to literature and criticism. But there have been numerous monographs on individual writers, which form interesting reading, though they may not throw much new light on their subjects. Goethe-literature has been enriched by Emil Ludwig's *Goethe*, which purports to be the story not of the great German poet, but of the man Goethe, and might therefore be as properly classed with biography. The same is true of Etta Federn's *Hebbel*, which is a specimen of biographical fiction and which has caused no little discussion among the Hebbel authorities. Heinrich Maync is the author of a volume on *Theo. Fontane 1819-1919*, which ends in an inquiry into the rank accorded to the poet-novelist a hundred years after his birth. F. F. Baumgarten has written a critical study entitled *Das Werk Conrad Ferdinand Meyers*. Paul Heukamer is the author of a book on that eccentric member of the romantic School of Germany, Zacharias Werner. Nietzsche comes in for a share of serious attention in several books, among them Ernst Howald's *Friedrich Nietzsche und die klassische Philologie*. There have been books on Heine, Jeremias Gotthelf, Hölderlin, and others.

BIOGRAPHIES, LETTERS, MEMOIRS. The serious interest in socialism and the personages identified with its history manifests itself not only in several books on the Marxian system, but also in biographical studies, foremost among them Hermann Oncken's *Ferdinand Lassalle*, which he calls a social-political biography. Psycho-analysts are prying into the lives of the great writers, a striking example of their methods being Eduard Hirschmann's *Gottfried Keller*, frankly called a "psycho-analytic study." Hermann Esswein has given us a new book on Strindberg. Karl Quenzel's work, *Der Maler Feuerbach*, is a biography of the artist based on letters and memoirs. Moritz Stühl has added to Chodowiecki literature the diary recording the artist's journey to Dresden and Leipzig. Ernst Anemüller is the author of a Schiller book: *Schiller und die Schwestern Lengefeld*, and Albert Janssen has written on *Die Frauen rings um Hebbel*. Eduard Brandes is the editor of the letters of Jens Peter Jacobsen, which has been promptly translated. Richard Dehmel's *Zwischen Volk und Menschheit* is a new war diary. Gustav Frenssen's *Grübelzeiten—1890-95* is a book of leaves from diaries, notes on current events, aphorisms, etc. The *Lebenserinnerungen* by von Eckartstein of which the first volume is dated 1895 gives interesting glimpses of German public life.

HISTORY, WAR BOOKS, ETC. Hans von Helmolt presents *Ein Vierteljahrhundert Weltgeschichte 1894-1919*. He has also made an attempt to discredit the authenticity of Karl Kautsky, the socialist writer, who on getting hold of the documents in the archives of the government has done so much towards enlightening the Germans about the causes of the war. Helmolt's book bears the title *Kautsky, der Historiker*. A book called *Die neueste Geschichte des jüdischen Volkes* is said to be translated, but the original language is not mentioned; the author's name on the title-page is S. M. Dubnow. Of the numer-

ous war books Otto von Stölpnagel's *Die Wahrheit über die deutschen Kriegsverbrechen* is only one of many attempts to deny the evidence of Allied and neutral witnesses. In *Kriegsfahrten deutscher Maler* are collected notes taken by German painters in 1914-15 in France, Belgium, the Dardanelles, etc. Count Luckner, the commander of the cruiser *Seeadler*, dedicates the story of his adventures, *Seeteufel*, to "his boys."

FOLKLORE, TRAVEL, ETC. Wilhelm Hausenstein is the editor of a selection from the world's fairy-tales, which is illustrated by reproductions of carvings, sculpture, pottery, textiles, etc., and is entitled *Faoten*. Theodor Koch-Grünberg has edited a collection of *Indianermärchen aus Südamerika*. A. Diss is responsible for a book on *Kaukasische Märchen*. Otto von Taube for a volume of *Russische Märchen*. *The Siyavashi*, the old Persian tale from Firdusi, has been brought out in a new edition. Victor Ottman has written a book called *Mexikaner*, Heinrich Schiller is the author of *Brasilien, ein Land der Zukunft*, and Leo Mirau of *Argentinien*. A warning to Germans not to emigrate to the United States is contained in H. Zetzsch's *An der Indianergrenze*, which is announced as a truthful picture of America for the instruction of young and old. Bernhard Kellermann's *Ein Spaziergang in Japan* is a book of some charm, and Stefan Zweig's *Fahrten, Landschaften und Städte* is delightful reading.

PHILOSOPHY, ETHICS, ART, MUSIC. Emil Barthel is the author of a work called *Polargeometrie*. Karl Vorländer attempts to deduce the philosopher's reading of life from his writing in *Kants Weltanschauung aus seinen Werken*. Hermann Heise is responsible for *Zarathustra's Wiederkehr ein Wort an die deutsche Jugend*. Martin Havenstein strikes also a serious note in addressing his people: *Vornehmheit und Tüchtigkeit dem deutschen Volke zur Einkehr*. Under the collective title *Die Freude* and the sub-title *Blätter einer neuen Gesinnung*, Wilhelm Uhde edits an attractive work, containing selections from the world's literature from Schiller to Paul Claudel and reproductions of art from Beltraccio to Picasso. Konstantin Umansky is the author of *Neue Kunst in Russland—1914-19*. Paul Wertheimer has written the preface to the book *Indische Baukunst* contained in the *Orbis Pictus*. Hans Joachim Moser has written a new history of music; Hans Volkmann a biography of *Emanuel d'Astorga*, Eugen Segnitz a book on *Arthur Nikisch*. C. J. Glasenapp on *Siegfried Wagner und seine Kunst*, and Sebastian Röckl adds another book to the voluminous literature on the subject suggested by the title: *Ludwig II und Richard Wagner*.

MISCELLANEOUS. Carry Brachvogel reviews the political possibilities opening before woman in *Eva in der Politik*. Jacob Schaffner seems to have been converted to socialism: his new book is entitled *Die Erlösung vom Klassenkampf*. *Der Atheismus und seine Geschichte im Abendlande* by Fritz Mauthner directs attention to a subject almost forgotten in the present preponderance of social problems. Christian Morgenstern has published a book of *Epigramme und Sprüche*. It is reported that Gerhart Hauptmann, who in his youth studied sculpture in Rome, has once more installed himself in a studio. Hermann Hesse, too, has given proof of versatility by exhibiting his water-colors in Basle. On receiving the Grillparzer Prize for

his latest drama Karl Schönherr turned over the amount to the suffering children of Vienna's poor. Helen Keller has turned over the proceeds of the German editions of her works to the Germans blinded in the war. Considerable sensation has been caused by the appearance of a book under the title *Rudolf der Letzte-Tagebuch eines deutschen Fürsten*, a fictitious diary drawing upon the war books of Bethmann-Hollweg, Czernin, and others. Stefan Zweig has published a protest against an unauthorized translation of his story *Brennendes Geheimnis*, which was published in America under the title *The Burning Secret* and credited to one "Stephen Branch." There have been numerous new editions of E. T. A. Hofmann, Theodor Storm, Friedrich Theodor Vischer, Anzangruber, Chamisso, Glasbrenner, and a new volume in the Weimar Goethe Edition. The writings of Alfred Kerr, the critic, of Gustav Meyrink, the inimitable satirist, of Wedekind, and others have been collected. Among the many translations are Romain Rolland's *Colin Breugnot*, the popular tales of Tolstoy, works by Anatole France, Louis Couperus, Remy de Gourmont, Karl Gjellerup, Selma Lagerloef, and French, Italian, and Spanish classics.

NECROLOGY. Franz Hirsch, the venerable editor of magazines which he outlived by many years, died, July 18. Another representative of the old generation, Bernardine Schulze-Smidt, whose stories revolved mainly about life in Bremen, passed away, February 17, at the age of 74, after having finished a new story since published. The death of Richard Dehmel, February 8, removes from the ranks of what in the nineties was called "Young Germany" one of its most interesting figures. Swiss literature has suffered the loss of Adolf Frey, poet and literary historian, who died, February 12, in Zurich. Leopold von Schröder, philologist and literary critic, died in Vienna on February 9th. Franz Koppel-Elfeld, dramatist and collaborator with the popular von Schönthan, passed away January 16th. In Ludwig Ganghofer, who died, on July 24th, Munich lost one of her most popular literary celebrities. Jeannot Emil Freiherr von Grothuss, a writer who founded one of the best monthly magazines, *Der Türmer*, and Karl Storck, the editor of that magazine, died during the summer. August Spanuth, pianist and music critic, died January 11th. Wilhelm Wundt, the famous physiologist, passed away, August 31.

GERMAN NEW GUINEA. The territories now known as NEW GUINEA, formerly held by Germany in the West Pacific including Kaiser Wilhelm's land; Bismarck Archipelago; the German Solomon Islands; Nauru, the Caroline Islands, the Marshall Islands, and the Marianne or Ladrone Islands, with the exception of the island of Guam. These colonies were occupied by the Australians, Sept. 12, 1914. Under the Treaty the islands north of the equator namely, the Marshall Islands, the Carolines, the Pelew, and Ladrone islands were turned over to Japan under a mandate, and those south of the equator including the Bismarck Archipelago, the German portion of the Solomon Islands, and Kaiser Wilhelm's land were assigned to Australia. German Samoa was assigned to New Zealand, and Nauru was assigned to Great Britain under a mandate. At the beginning of 1920 the British administrator of the New Guinea possessions of

Germany south of the equator was Brig.-Gen. G. J. Johnston.

GERMAN PROTECTORATES. See GERMAN COLONIES.

GERMAN SAMOA. A former German protectorate comprising that portion of the Samoan group which lies to the west of longitude 171° east; now known as the territory of Western Samoa, including Savaii and Upolu, the largest of the Samoan islands. Area, about 994 square miles; population, about 40,000. They were occupied by the New Zealand forces Aug. 29, 1914, and their status was subject to the Peace Conference, at which it was proposed that they should be governed by New Zealand as a mandatory under the League of Nations. The plan of government proposed by New Zealand included a legislative council to which native chiefs would be eligible.

GERMAN SOUTHWEST AFRICA. A former protectorate of Germany lying between Angola and the Cape Province of the Union of South Africa; captured by South African forces from the Germans in July, 1915; and administered after the war by the Union of South Africa under a mandate. Area, 322,200 square miles; European population in 1913, 14,830, of whom 12,292 were Germans. For statistical details pertaining to education, production, etc., see preceding YEAR BOOKS. In 1918 the imports were £1,031,534. In 1917-18 the revenue was £306,045 and the expenditure £650,052. For military purposes a number of railway lines were built during the war and they have since been extended. The total mileage in the protectorate was placed at the beginning of 1920 at 1417.

GERMANICS. See GERMAN LITERATURE; PHILOLOGY; AUSTRIA; SWITZERLAND; HOLLAND; ETC.

GERMANY. See IRON AND STEEL; NAVAL PROGRESS.

GERMANY. A republic set up after the war in place of the imperial monarchy overthrown in the revolution of the closing months of 1918; organized under the constitution adopted July 31, 1919, and promulgated Aug. 13, 1919; formerly the German empire, a constitutional monarchy consisting of 25 federated states and an imperial territory or Reichsland; situated in central Europe.

AREA AND POPULATION. The 25 states of the former empire had an area of about 208,825 square kilometers, exclusive of the German part of Lake Constance and the North Sea lagoons, with a population estimated before the war, June 30, 1914, at 67,812,000. The latest official figures before the war were those of the census of 1910 which are given in detail along with final statistics in preceding YEAR BOOKS. In 1920 the area of the German republic was given at 203,176 square miles and the population at 63,051,979, the latter figures being based on the census of 1910, and giving a density of 310.3 per square mile. As the arrangements under the Treaty of Versailles were still incomplete, the existing limits of the republic in 1920 were not known, but the above figures were probably excessive, and a closer estimate for area was about 171,910 square miles and the population about 55,086,000. These estimates are based on the losses occasioned by the following changes prescribed by the Treaty: 1st, Alsace-Lorraine returned to France; 2nd, the larger part of West Prussia ceded to Poland; 3rd, a portion of Eastern Gali-

cia ceded to Poland; 4th, part of Upper Silesia to Czecho-Slovakia; 5th, Eupen and Malmely to Belgium; 6th, Memel to the Allies; 7th, Danzig to the Allies. Of these Alsace-Lorraine was estimated at 5604 square miles, with a population of 1,874,014; the Polish cession at 17,756 square miles, with a population of 3,500,000; the part ceded to Belgium, 386 square miles, with a population of 65,000; Memel, 965 square miles, with a population of 650,000; Danzig, 579 square miles, with a population of 250,000. The regions to be determined by plebiscite were estimated at an area of 11,580 square miles with a population of 3,500,000. There was finally the Saar Basin which was placed for a term of years under the League of Nations and was at the expiration of that term to decide by popular vote upon its destination; area, estimated at 220 square miles, with a population of 640,733. The area under temporary occupation by the Allied military forces was placed at about 9650 square miles with about 7,000,000 inhabitants. The cities over 500,000 at the census of 1910 were as follows: Berlin, 2,071,257; Hamburg, 931,035; Munich, 596,467; Leipzig, 589,950; Dresden, 548,308; Cologne, 516,527; Breslau, 512,105. Berlin at the census of Oct. 20, 1919, was given at 1,897,864. No later figures for education were available than those given in preceding YEAR BOOKS.

EMIGRATION. No complete figures of emigration for the year 1920 were available, but during the first nine months the emigrants to Brazil, Argentina, Mexico, and the United States numbered 6010 of whom a very small number went to the United States. While this was twice as many as had emigrated during the same period in the preceding year, it was but a small fraction of what had been expected. It was estimated at the close of the year that nearly 5,000,000 Germans were ready to emigrate if they could procure the money for their passage, the greater part of them wishing to go to Brazil on account of the good opportunities for colonization there offered. At the close of the year the government was undertaking by means of a series of lectures to supply intending emigrants with information in respect to the South American countries. Some alarm was expressed by officials over the class of German emigrants who were said to come from the most desirable elements.

PRODUCTION. Over 90 per cent of the soil had been estimated as productive before the war and the arable land was placed in 1913 at 65,148,000 acres; the woods and forests at 35,558,000; meadows, pasture, and grass at 21,760,500. The chief crops in 1919 with their acreage and total yield in metric tons were as follows: Wheat, 2,828,150 acres and 2,169,169 metric tons; rye, 10,789,235 acres and 6,100,444 metric tons; barley, 2,815,127 acres and 1,910,363 metric tons; oats, 7,482,197 acres and 4,453,688 metric tons; potatoes, 5,451,982 acres and 21,449,186 metric tons. The yield of beets in 1916 was 16,877,520 metric tons. (See AGRICULTURE.) The International Bureau of Agriculture published in November the following figures for live stock in Germany, showing the movement since 1912: Horned cattle, March 1, 1912, 16,444,723; July 2, 1919, 16,381,605; June 1, 1920, 16,981,522; sheep, on these respective dates, 6,241,726; 6,162,794; 7,021,342; hogs, 8,610,796; 9,430,268; 11,656,813; goats, 5,781,750; 4,679,419; 4,967,537.

Prussia is the main source of mineral produc-

tion and the principal mining regions are in Rhenish Prussia, Westphalia, and Silesia, for iron and coal; in the Harz Mountains for copper and silver; and in Silesia for zinc. The source of a considerable part of Germany's mineral wealth was in the regions lost in the war. Complete figures for recent mineral publication were not available but the following information was issued in respect to potash and lignite in 1920. The potash deposits of Germany, which were discovered by the Prussian government in 1843 at Stassfurt while boring for rock salt and which occur in upper layers of rock salt in the plains of Northern Germany, have been estimated to occupy a volume of 10,790,000,000 cubic meters and to contain 20,000,000,000 metric tons of potash salts, corresponding to about 2,000,000,000 metric tons of potash (K_2O), a quantity sufficient to supply the world for 2000 years at the present rate of consumption. These beds were first exploited about 1860, and have furnished practically the entire world's supply of potash for many years. The results of the lignite mining in the Niederlausitz district, in spite of many interruptions, were more favorable in 1920 than in 1919. The output increased from 20.4 to 24 million tons, and the production of briquettes from 5.5 to 6.5 million tons. In comparison with 1919 the output of the individual miner showed a slight improvement, although still only half that of 1913.

COMMERCE. Before the war the foreign trade of Germany was according to the *Statesman's Year Book* for 1920 as follows in 1913: Imports, £560,335,800; exports, £509,965,000. During the 10½ months following the signing of the armistice, the exports of the United Kingdom to Germany were valued at £16,207,748 and the imports to the United Kingdom from Germany at £217,435. During the year ending June 30, 1919, the United States exported to Germany goods to the value of \$8,818,882 and imported \$944,981. In 1920 the government had not resumed its publication of the statistics of foreign trade, but the following information was supplied by the Berlin press: Prior to the war Germany's foreign trade always showed an adverse balance, but this was more than compensated by shipping activities, foreign holdings, and interest on capital invested abroad. The mercantile fleet alone brought in 1,000,000,000 to 1,500,000,000 gold marks gross profits during 1913, equal to 60 to 65 billion paper marks under present conditions. The following figures show the foreign trade of Germany with several countries during 1919:

Country	Exports to Germany	Imports from Germany
France	francs 1,283,968,000	590,696,000
England	pounds sterling 23,180,000	993,415
United States	dollars 92,761,314	10,608,141
Switzerland	francs 698,000,000	482,000,000
Czechoslovakia	crowns 843,838,000	789,130,000

FINANCE, JAN. 1, 1920. At the beginning of the year, the budget estimates for 1920-21 as given by the *Statesman's Year Book* were as follows:

	Revenue	1,000 marks
Customs (calculated on a peace basis)		1,800,000
Tax on consumption		5,900,000
Tax on financial operations		1,000,000
Tax on business		3,000,000
Tax on property		3,000,000
Tax on capital		3,000,000
Various		7,600,000
Total		25,300,000

Expenditure	1,000 marks
Debt	10,000,000
Pensions and indemnities	4,300,000
Administration	1,700,000
Army	1,500,000
Pensions for officers	200,000
Various	6,500,000
Total	24,200,000

The total gold, silver, and other metal coin in circulation March 31, 1918, was 7,428,077,200 marks; the total paper money in circulation Jan. 31, 1918, was 17,731,000,000 marks. The total funded debt Oct. 1, 1918, bearing interest was 93,719,974,200 marks; treasury bills bearing no interest, 23,017,629,500 marks; total loan credits on Oct. 1, 1919, 90,400,000,000 marks; total public debt estimated at the beginning of 1920, 204,000,000,000 marks of which the war debt was officially estimated at 157,700,000,000 marks; calling for interest to the amount of 7,900,000,000 marks.

FINANCIAL SITUATION, APRIL 1. The above figures show the financial situation as reported at the beginning of the year. The following information in regard to conditions at the end of March was supplied by the United States Bureau of Foreign and Domestic Commerce on the basis of reports in the Berlin press:

On March 31, 1920, Germany's national debt amounted to 197,000,000,000 marks (New York mark exchange then about \$0.025), of which sum only 92,000,000,000 marks, i.e. not quite half, was consolidated by means of long-term loans. The debts of the federal states amounted on Aug. 1, 1917, to 17,500,000,000 marks in firm loans and 12,500,000,000 marks in short-term liabilities, while the debts of the Communes amounted to 12,500,000,000 marks consolidated and 10,000,000,000 marks unconsolidated. The entire national debt of Germany would, therefore, amount to about 250,000,000,000 marks, or about 4500 marks per capita of the population of the country since the peace treaty, as against one-tenth of that amount in 1914. At that time Germany's liabilities, which were almost exclusively incurred for productive investments, were counterbalanced by actual values of at least the same amount. The 250,000,000,000 marks above mentioned were entirely uncovered. The expenditure of the commonwealth for the year 1920 was estimated at 27,900,000,000 marks for the ordinary budget as laid before the National Assembly by the Finance Minister early in May. To this sum must be added extraordinary expenditures, estimates at 11,600,000,000 marks, and the deficit of the post office and railways, which formerly showed a profit amounting to the enormous sum of 15,000,000,000 marks. This made a total debit for the year, and that, too, for commonwealth requirements only, of 54,500,000,000 marks. Amendments introduced into the estimates by the National Assembly with regard to the salaries of civil servants involved an additional expenditure of 2,000,000,000 marks in the ordinary budget. Moreover, since the general increase of prices induced by the depreciation of money had by no means reached its highest point, there was every probability that the administrative expenses as regards personnel would increase still further. And in the same way the expenditure in the extraordinary budget—in which, to take only a few items, the damages caused by the riots are put down at 1,000,000,000 marks, demobilization of the old army at 2,100,000,000

marks, and the liabilities incurred under the peace treaty at 5,000,000,000 marks—was likely to exceed the estimate. The fiscal requirements of the federal states and Communes could not be ascertained with accuracy, since only a few budgets had been published. But in 1919 the Finance Ministry had estimated the future financial needs of the commonwealth at 17,500,000,000 marks and those of the individual states and Communes at 6,000,000,000 marks. Owing to the great increase of expenditures the requirements of the states and communes probably amounted to between 18,000,000,000 and 20,000,000,000 marks. It was therefore probable, then, that the total sum which the German nation would have to expend in 1920 would amount to between 75,000,000,000 and 80,000,000,000 marks.

The estimated revenue of the commonwealth for 1920 was as follows:

	Billion marks
Share in direct taxation	4.4
Saving in interest effected by the Commonwealth emergency levy	2.25
Tax on sales (Umsatzsteuer)	3.1
Coal tax	4.5
Tobacco tax	1.0
Customs export dues	3.5
Stamp tax and dues from banks and railway traffic	2.0
Direct and indirect dues	1.0

This gave a total of 22,000,000,000 marks. From the nonrecurrent revenue from the war taxes, viz. the tax on increased fortunes and the super-income tax, 3,000,000,000 marks were still available for 1920, so that the total revenue for the year might be increased to 25,000,000,000 marks. That was not even enough to meet the ordinary expenditure, which exceeded that sum by 2,900,000,000 marks. According to the plans of the Finance Ministry, this deficit was to be covered by various new taxes. On the other hand, there were no credit items at present to counterbalance the extraordinary expenditure and the deficits of the postal and railway services. Matters stood somewhat better with the federal states and communes, whose total revenue, in the absence of reliable data might be estimated at about 15,000,000,000 marks. The financial position of the commonwealth, states, and Communes might therefore be shown as follows:

Debit:	Billion marks
Commonwealth—	
Ordinary expenditure	27.9
Extraordinary expenditure	11.6
Deficit of posts and railways	15.0
States and communes, about	20.0
Probable excess of the budget estimates (10 per cent)	8.0
Total	82.5
Credit:	
Current commonwealth taxes	25.0
New taxes to be imposed	2.9
Revenue of states and communes	15.0
Uncovered deficit	89.6
Total	82.5

Provided, therefore, that the expected increased expenditure was kept within modest limits and that the revenue from taxes and dues did not fall far behind the estimates there would remain an uncovered deficit of approximately 40,000,000,000 marks. To obtain this sum by means of a loan would increase the amount of Germany's national liabilities to 300,000,000,000 marks. The payments already made and to be made on

the Entente's indemnification account were confined to the sums demanded for the deliveries, required under the peace treaty, of coal, machinery, chemicals, cattle, etc. Further sums must be forthcoming for the indemnification of the owners of vessels and dock material to be surrendered, for the payment of pre-war debts, for which the commonwealth had to assume the difference in the rate of exchange, and for other payments still in arrears.

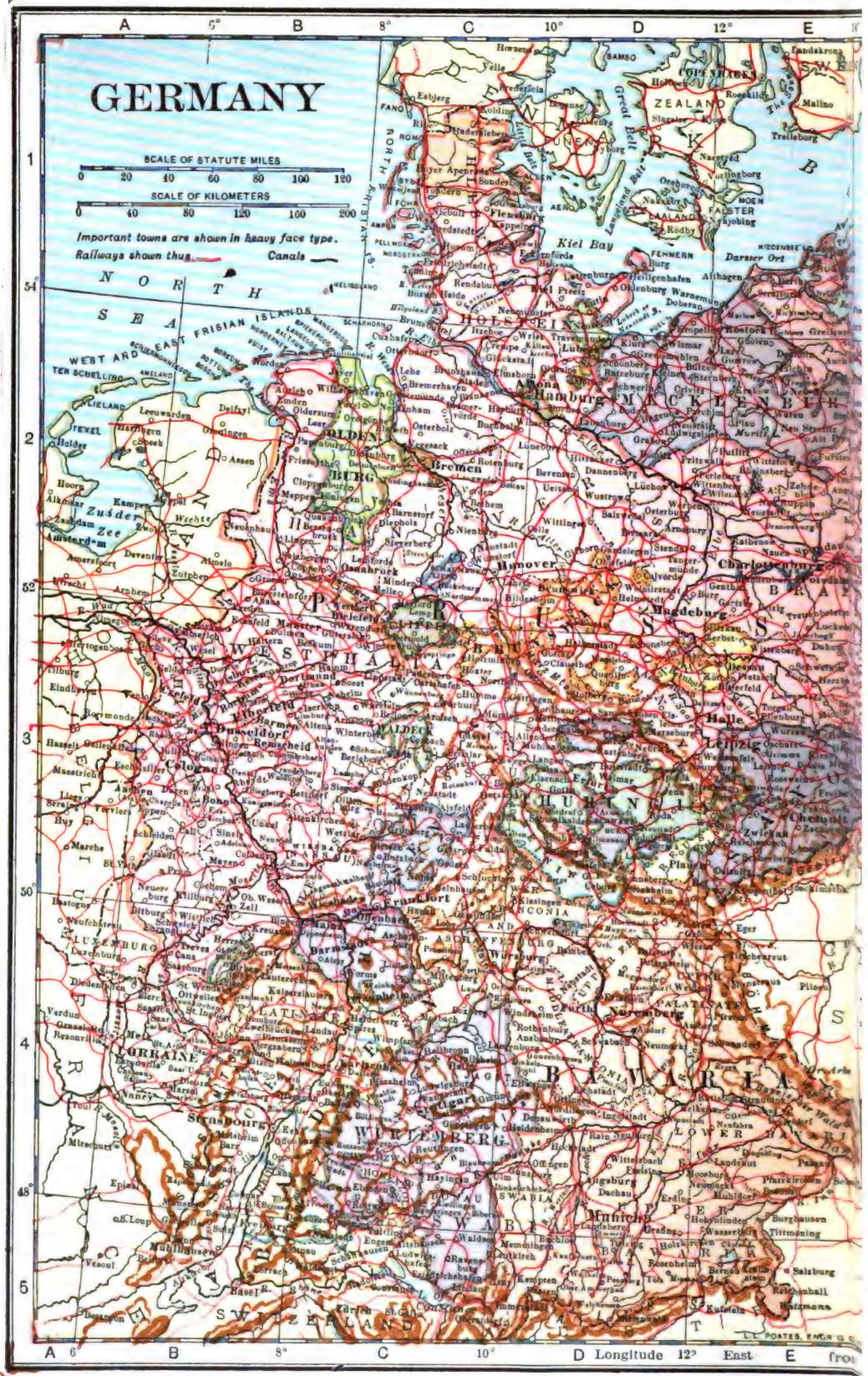
TAXATION. With an annual revenue of over 40,000,000,000 marks, Germany, as regards the yield of taxation, headed all other nations according to German writers. They cited an estimate prepared by M. Dumont, chairman of the French budget committee, which figured the contributions per capita of the population in various countries as follows: England, 526 francs; France, 453 francs; America, 272 francs; Italy, 228 francs; and Germany, 700 marks. They said, the objection that these figures only represent paper marks would not hold water. For while in January the prices for many articles for which Germany must rely wholly or in part upon import from abroad had accommodated themselves to the depreciation of the mark in foreign countries, incomes of all kinds, including manufacturers' profits, wages, and salaries, had not increased in anything like the same proportion as the mark had fallen. To what an extraordinary extent German incomes and fortunes were being drawn upon for the public requirements might be judged from the following examples: A taxpayer who hitherto had lived on the interest derived from a capital of 1,000,000,000 marks, had drawn 50,000 marks annually in interest, had to contribute 244,250 marks of this capital to the commonwealth emergency levy. Of this reduced income of 37,787 marks he had to pay 8931 marks income tax and 3778 marks tax on the yield of capital, so that only 25,078 marks remained of his original income of 50,000 marks. And this income, reduced by exactly one-half, was further burdened with indirect taxes of all kinds. A taxpayer who before the war had a capital of 2,000,000,000 marks, and had doubled it during the war, was in the spring of 1920 taxed as follows: 2,328,030 marks war tax and 1,004,500 marks on the emergency levy. Of the income remaining to him he had to pay 26,439 marks income tax and 8337 marks tax on the yield of capital, so that, after paying direct taxes, only 48,599 marks—that is, less than one-fifth of his original income of 250,000 marks—remained, and this was still further reduced by the other taxes on consumption, transport, etc. In spite of these enormous rates of taxation, these four direct taxes did not bring in even one-half of the annual burden of the above-mentioned 40,000,000,000 marks imposed upon the German nation.

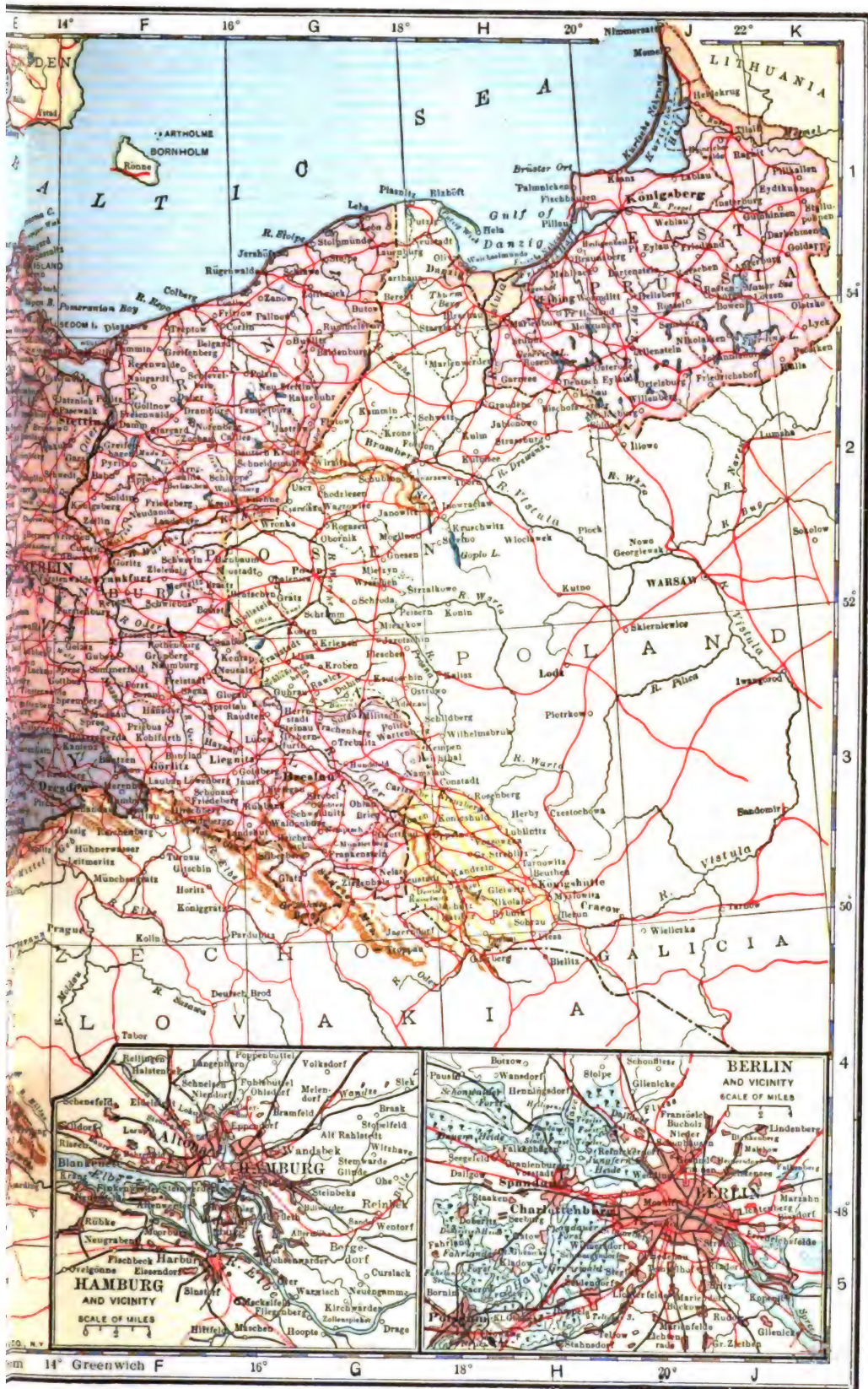
FINANCIAL SITUATION IN THE SUMMER. In the Reichstag session of July 1, 1920, the condition of German finances was discussed by the Minister of Economics. After having pointed out that the expenditure of the commonwealth during 1919 had amounted to not less than 74,500,000,000 marks (14,400,000,000 marks were needed for covering regular expenses and 57,750,000,000 for meeting irregular expenses; 1,800,000,000 billion were consumed by the amortization of debts), he analyzed the budget for 1920, which was still awaiting its final settlement. The main items of the budget were set down as follows:

Expenses:	Marks
Commonwealth debts	12,400,000,000
Pensions, military pensions paid to disabled men, pensions paid to the widows of fallen men	3,900,000,000
Expenditure incurred by the new decree concerning the pay of soldiers, etc.	3,000,000,000
Expenditure on the food supply of the population	3,000,000,000
Military and navy budget	1,900,000,000
Budget of the Commonwealth Work Ministry (paying for the medical treatment of wounded soldiers) ..	1,100,000,000
For miscellaneous purposes	2,700,000,000
Revenues of the regular budget are thus estimated:	
Revenues coming from administration ..	200,000,000
Direct taxation and taxes on traffic ..	10,800,000,000
Duties and consumption tax	9,100,000,000
Some other direct taxes	3,000,000,000
Revenues flowing from banks and from export duties	2,000,000,000
Revenues expected from new taxes not yet granted	2,900,000,000

Should the new taxes, mentioned as the last item, be granted, the revenues of the regular budget would cover the expenditure for the first time since the outbreak of the war; but there was little hope of accomplishing this, as it was yet very doubtful whether the entire sum set down on paper would be reached. The increase in the deficits of the postal and railway administration was reaching large figures. The postal administration had recently estimated its deficit at 870,000,000 marks and the railway administration its deficit at from 12,000,000,000 marks to 15,000,000,000 marks.

The financial situation of Berlin was set forth by the German delegates to the Brussels Conference and the main points were as follows: On August 31st according to them the debts of the empire amounted to 240,000,000,000 marks an increase of 40,000,000,000 marks since May 31st. The cause of this increase was the falling off in the state-controlled industries. The debts of the separate states amounted to 24,700,000,000 marks. The budget for 1919 could not be determined exactly on account of the lack of precise figures for the receipts but the receipts were placed at only 7,617,000,000 marks while the expenses amounted to 75,324,000,000 marks. The budget estimates for 1920 made ordinary receipts and expenditures balance at 39,800,000,000 marks, while the extraordinary budget was 37,666,000,000 marks. The Germans defended their war and navy budget which amounted to 5,089,000,000 on the ground that it was the fault of the Treaty which obliged Germany to abolish obligatory military service and employ a mercenary force which required a high rate of pay. The increase of the extraordinary expenses was explained by the war burdens which increased to the extent of 47,000,000,000 marks for 1919-20 of which 4,769,000,000 fell within the first quarter of 1920. The chief financial measures taken were a general income tax and a tax on business. The framers of the report pointed out the difficulty of determining the receipts and the seriousness of the situation in view of the fact that after the plebiscite a tenth of Germany's territory might be taken away. As to credit circulation it continually increased because the receipts did not cover the expenditures. It had mounted from 5,528,000,000 marks in 1914 to 72,223,000,000 marks in Aug. 31, 1920. In respect to commerce imports played the principal part and manufactured products were for the most part exported but Germany had great natural resources especially in coal and potash. The report





complained that the Treaty by imposing unlimited obligations had aggravated the economic crisis, and the report insisted that Germany must be in a condition to import more extensively than ever her raw materials and to export at the earliest possible moment her manufactured articles. These products would serve to make the payment of the debt possible. Imports had been unduly increased by the bringing in of useless articles of luxury and the government had measures in view against this practice. The report concluded with the remark that only vague guesses could be made in respect to the final development of German foreign trade. No great progress could be made toward a sound commercial condition till Germany succeeded in keeping down to the lowest point possible her own needs and increasing at the same time the production of German goods.

FINANCIAL SITUATION IN OCTOBER. According to the finance minister, the debt on September 18th was 242,700,000,000 marks, made up as follows: Funded debt, 91,000,000,000 marks; discounted treasury receipts and bills, 132,300,000,000 marks; additional obligations, 19,400,000,000 marks. The floating indebtedness to be taken over from the German states and the capitalization of the interest due for the surrender of the state railways came to 25,000,000,000 marks; and in addition there were 18,000,000,000 marks due the states for war expenses. The condition of the finances was reported to be exceedingly confused in October and the cabinet decided, October 10, to appoint a financial expert, Dr. Carl, who had served in the Prussian Finance administration, to audit the expenditures of the various departments. The deficit in the budget for 1920 was estimated at 67,000,000,000 marks and critics complained that this had been caused largely by reckless spending. By October 1st, the paper money in circulation was placed at 80,000,000,000 marks and in the latter part of September, the national debt was reported by the Germans at the financial conference in Brussels to be 240,000,000,000 marks. To this certain outstanding obligations were added by financial writers to the extent of 131,000,000,000 marks, bringing the total national indebtedness up to 416,000,000,000 marks.

RAILWAYS. The railway mileage Jan. 1, 1920, was placed at 38,809 of which 36,000 were state lines. The central government assumed control over all German state railways on April 1, 1920. During the year the attention of economists was directed to the conditions of railway operation in Germany, before, during, and after the war. The financial condition and operating expenses and receipts were summarized in a published statement. Here it was shown that during the last peace year the expenses of the German railway systems amounted to 2,345,000,000 marks, were covered by a total revenue of 3,347,000,000 marks, affording a surplus of about 43 per cent. In the following three war years both expenses and revenues increased, but the expenses never exceeded the revenues. In 1915 the receipts were 3,268,000,000 marks and the expenses 2,338,000,000 marks, giving a difference of about 40 per cent. In 1916 the receipts amounted to 3,805,000,000 marks and expenses to 2,724,000,000 marks, a difference of 40 per cent, and in 1917 the receipts amounted to 4,435,000,000 marks and expenses 3,648,000,000 marks, a difference of 21.6 per cent. The year of the revolution, 1918,

ended with increased total revenues amounting to 4,617,000,000 marks, but the expenses exceeded the receipts by 1,324,000,000 marks, or 28.7 per cent, amounting to 5,941,000,000 marks. During the year 1919, in spite of the increase in passenger rates, the expenses were 11,040,000,000 marks, which again exceeded the revenues by 4,366,000,000 marks, or 65 per cent.

For the year 1920 revenues were estimated at 14,344,000,000 and the expenses were set at 16,935,000,000 marks.

ARMY. The terms of disarmament imposed by the Treaty will be found in the article *WAR OF THE NATIONS* in the preceding *YEAR BOOK*. From the moment they came into force with the ratification of the Treaty by Germany Jan. 10, 1919, down to the close of the year 1920, there was constant complaint especially on the part of French public men that Germany was not faithfully executing them and the year 1920 closed with specific charges to that effect by Marshal Foch. The latter charges together with the main points in the discussion throughout the year 1920 will be found in the article *WAR OF THE NATIONS* in the present volume. (See also below, under *History*.) Down to the beginning of 1920 the following steps were reported to have been taken by Germany towards disarmament: The reduction of the Reichswehr began in August, 1919. At that time it comprised 43 brigades of all arms, 3 marine infantry brigades stationed at Berlin, Hamburg, and in Upper Silesia, and a coast-guard regiment in the northeast ports. Early in 1920 the Reichswehr was reported at a strength of 200,000 men and the land marine forces at 12,000, both of these forces being under the Ministry of Defense. There began in 1919 certain organizations under the Ministry of the Interior which occasioned much complaint on the part of Allied critics as forming the nucleus of a real military force. It was alleged that preparations were being made under cover for the establishment of an armed force that would serve the purpose of a regular army when the need arose. An organization known as the public safety police was created with a strength placed at 50,000. The civic guards were estimated at 350,000 and the emergency volunteers at 150,000. The public safety police were armed and equipped and distributed in the chief cities. The emergency volunteers were organized for the purpose of maintaining order under the civil government and also serving as a reserve to the Reichswehr. Arms were stored for them at Reichswehr brigade headquarters, but were not distributed. The civic guards also unarmed, but with rifles and revolvers stored for them, were to serve for the maintenance of order under the civil government in the localities. Allied critics charged that the raising of these forces was contrary to the terms of the Treaty which prohibited military associations of civilians or reservists. The Treaty provided that after April 10, 1920, the civic guards or police force should exist only so far as they had existed in 1913 with such increase as kept pace with the growth of population. Throughout the concluding months of 1920 it was charged that these terms were violated and the charge was denied with equal emphasis by the German authorities.

NAVY. The armistice and the Treaty destroyed the German navy as a fighting force. What remained of the fleet was lost by the scuttling of vessels interned in the Scapa Flow June 21, 1919,

when the following vessels were sunk: 10 battleships, 5 battle cruisers, 5 light cruisers and 30 destroyers. The Allies claimed reparation, which was made in 1920 by the German government's turning over various maritime material. Other vessels were surrendered by Germany to the Allies. By the terms of the Treaty a navy recruited by volunteers was permitted to the following extent: 6 battleships of the pre-dreadnought type, 6 light cruisers, 12 destroyers, and another 12 destroyers unless an equal number of ships should be built to replace them; total personnel not to exceed 15,000; no submarines to be built. The National Assembly in 1919 passed an act creating a navy on the basis of volunteers for the protection of the coasts and fisheries, police service, and the removal of mines, and on Sept. 3, 1919, an order for the enlistment of naval volunteers was issued.

On September 16th it was announced in Paris that Germany had by that time surrendered steamships and sailing vessels with a gross tonnage amounting to 1,944,565 which practically completed the delivery of the tonnage due under the Treaty.

GOVERNMENT. The new constitution of Germany which was promulgated Aug. 13, 1919, is outlined in the preceding YEAR BOOK. Executive power is vested in a president to be elected by the entire people for seven years and in a ministry appointed by him but responsible to the Reichstag. Legislative power is vested in the legislature or Reichstag elected by universal, equal, direct, secret vote of male and female electors on the principle of proportional representation, and in an imperial council or Reichsrat consisting of the representatives of the component states. The consent of the latter house is required to all bills before they are introduced into the Reichstag. The composition of the Reichsrat was as follows: Prussia, 25 members; Bavaria, 7; Saxony, 5; Baden, 3; Württemberg, 3; others, 20; total, 63. President at the beginning of 1920, Friedrich Ebert.

The Bauer ministry was in power at the beginning of the year. It had been constituted, June 21, 1919, as follows: Chancellor, Dr. Gustav Bauer (Socialist); Foreign Affairs, Dr. Hermann Müller (Majority Socialist leader); Vice-Chancellor, Herr Erzberger; Interior, Dr. David; Economics, Herr Wessell; Labor, Herr Schlicke; Finance, Herr Meyer; Posts and Telegraphs, Herr Giesberts; Colonies, Dr. Paul; National Defense, Herr Noske; Food, Dr. Robert Schmidt. For new ministries, see below under *History*.

HISTORY

INDUSTRIAL UNREST. Labor difficulties were constantly threatened during the year. The danger of control by the revolutionary element added greatly to the seriousness of strikes and all other labor disorders. A serious railway strike occurred in Westphalia in January. At the same time the government had to contend with the demand of its functionaries for increased wages and with the attempts of radicals to stir up revolts among the workingmen. The Communists and other radical groups were endeavoring to control the industries. When the Works Council bill which had been proposed by the government for the establishment of workingmen's councils under state control was under discussion, the radicals made an attempt to force the government's hand. An attack was made

on the government building which was defended by means of machine guns and rifles. It was repulsed with a loss of 42 persons killed, and 105 injured, and martial law was again proclaimed. The Works Council bill was passed on February 4th. Its principal feature was representation of workingmen's delegates in the management of factories and other industrial plants.

THE KAPP ATTEMPT AT COUNTER-REVOLUTION. Suddenly in March, a counter-revolution surprised the government by an attack on Berlin. The malcontents under the head of Dr. Wolfgang von Kapp, and made up apparently of monarchists supported by the Pomeranian Land League and by monarchist sympathizers generally, sent a body of troops on March 13th into the city of Berlin. Gen. Von Lüttwitz, who had charge, seized the public buildings and principal strategic points of the city and compelled the President and government to take flight, first to Dresden and later to Stuttgart and for five days the monarchists were in possession of Berlin. In north Germany, government troops refused to fight the rebels, but in south and west Germany there was determined hostility to the movement. In general, there was little sympathy with the counter-revolutionists throughout the country. Dr. Kapp declared himself imperial chancellor and made Baron von Lüttwitz commander-in-chief of the army. Various proclamations were issued with a view to placating the Socialists and gaining the confidence of the people. The Ebert government met the new movement by declaring a general strike. It was soon evident that the scheme of the counter-revolutionists had been ill conceived, and by March 15th its failure was assured. There followed an attempt on the part of the radicals to get the upper hand of the Bauer ministry. Its prestige and authority were diminished. Herr Noske who had repeatedly been hailed as the strong man of the government was forced to resign, being accused of favoring the reactionary and military element in his struggle against the Independent Socialists and the Communists. Unable to cope with the opposition of the extremists, faced with the danger of armed resistance on the part of the workingmen in the Ruhr district, and unable to satisfy the demands of the trade unions (see below), it fell from power, March 26. The trade unions had demanded among other things that they should have the right to choose members of the cabinet, and direct legislation, and that all persons guilty of taking part in the recent counter-revolution should be prosecuted and punished. The President of the republic, Ebert, chose as Prime Minister the Socialist deputy, Dr. Hermann Müller, who was the third incumbent of the office of Chancellor in the new republic.

THE MÜLLER MINISTRY. The ministry though formed largely under trade union influence was a coalition of Socialists, Democrats, and Centrists. It was made up as follows: Dr. Hermann Müller, Chancellor; Herr Lansberg (Socialist), Foreign Affairs; Dr. Bauer (Socialist), Finance; Herr Wirth (Democrat), Treasury; Dr. Blunck (Centrist), Justice; Herr Koch (Democrat), Interior; Herr Gessler (Democrat), National Defense; Herr Schmidt (Socialist), Economics; Herr Hermes (Centrist), Food; Herr Schlicke (Socialist), Labor; Dr. Bell (Socialist), Transportation; Herr Giesberts (Centrist), Posts and Telegraphs; Dr. David (Socialist), without portfolio. The programme was presented March 29th.

The government inveighed against the parties of the Right whom it accused of being responsible for the Kapp revolt and its bad consequences. The plans of those who wanted to increase the German army in defiance of the Treaty were denounced and the government declared its intention to punish both military and civil reactionaries. As to other policies, they included in general an application of democratic principles to the civil service and an extension of social legislation including the carrying through of the arbitration bill and the taking over by the empire or by the governments of states and cities of those industries which were ready for socialism.

THE RUHR DIFFICULTY. The Kapp revolt was followed by disorders throughout the country, especially in the mining region of Westphalia and the Ruhr Valley, when a state approaching civil war was reported. The Communists having overthrown the local police had taken possession of the towns and mines. This threatened revolution in the Ruhr district which had been one of the causes of the fall of the Bauer ministry was the first problem to engage the attention of the new Müller cabinet. Against the Red army which had been organized there, government troops were dispatched at the beginning of April. This caused the action on the part of France which for a time seemed to threaten disunion in the council of the Allied Powers (see **WAR OF THE NATIONS**). The Ruhr district is situated in the zone defined by the Treaty as neutral. The French government alarmed by the presence of German troops there, dispatched French troops to occupy German cities. General Dongoulette entered Frankfort and Darmstadt, April 6; and subsequently the cities of Hamburg, Hanau, and Dieburg were also occupied by the French troops. The French government declared at the same time that the occupation was a purely precautionary measure whose only object was to insure German respect for the Treaty (April 6), but there were frequent protests in Germany against its action. Law and order were restored in the Ruhr district by April 15th. After the conference of San Remo in April it was agreed among the Allies that the French troops occupying Frankfort and the other cities should be withdrawn as soon as the German troops had been reduced to the limit fixed by the Treaty. The German forces in the neutral zone along the Rhine were cut down and the French troops holding Frankfort, Darmstadt, Hanau, Dieburg, and Hamburg were withdrawn, May 17.

ALLEGED GERMAN-HUNGARIAN PLOT. At the close of the year the London *Times* gave an account of the designs formed at the time of the Kapp counter-revolution to place Europe under German dominion. According to this, efforts were made to induce Hungary to join in a German-Russian combination to prevent the execution of the Treaty. It was said that Admiral Horthy had been approached by German delegates who wished him to enter into an agreement for the admission into Hungary of German soldiers as immigrants, and for the training of Hungarian soldiers in the German manner, so that along with German forces they would be ready when the time came to invade Austria, seize Vienna, and set up there a military dictatorship and a provisional government. Other features of the alleged plot included a march upon Berlin by way of Bohemia and Saxony and in case of the resistance of the Czecho-Slovaks, the sending of

Prussian troops from Silesia and Pomerania who would be reinforced by the Russians. When Germany was once regained, a military dictatorship would be set up there under General Ludendorff and measures would be taken to support White Russia in the reconquest of the Russian empire. The alleged conspiracy included a plan attributed to Admiral Horthy for remaking the map of Europe along the following lines: Germany to receive Alsace-Lorraine, the southern part of Belgium, and the north of France; the Netherlands to receive the northern part of Belgium; Denmark to be incorporated in Germany; German-Austria and the German portions of Bohemia to be assigned to Germany; Poland to be divided between Russia and Germany, Russia to have her former frontier and besides that to include Anatolia, Armenia, Persia, and Mesopotamia, etc. Many further details all to the same effect were alleged in the account of the conspiracy, which was to culminate in an offensive against France in 1921.

FRENCH ARMY OF OCCUPATION. As to the conduct of the French troops of occupation there was little complaint, but much was made of the employment by the French of their colored troops from the colonies and there were frequent charges that the soldiers had attacked women and girls. These charges were denied by the French and military authorities and by Prime Minister Millerand, who showed that less than 7500 negroes were among the 85,000 French soldiers in the occupied regions. Nevertheless on May 29th it was announced that the black troops were soon to be withdrawn.

DISARMAMENT. It was evident at the time of the Ruhr difficulty that the German forces were in excess of the numbers allowed by the Treaty. They were constantly reported to be in excess down to the closing months of the year and the matter was agitated incessantly in the French press. On the other hand, the Germans repeatedly asserted that they were carrying out to the utmost of their ability all the terms in respect to disarmament. In general the contention of Germany's critics was that she was secretly maintaining forces which would serve eventually as a regular army; this the Germans steadily denied. See **WAR OF THE NATIONS**.

POLITICAL PARTIES. The general elections had been postponed and this fact was one of the influences that had hastened the Kapp counter-revolution. They were fixed for June 6th. The nature of the programmes of the various political groups during the electoral campaign was as follows: The German National People's party, formerly the Conservatives, demanded the restoration of German unity; return of the monarchical government; the fostering of national spirit among Germans living abroad; the return to Germany of her lost territories and colonies; and the pursuit of a vigorous foreign policy. The German People's party, formerly the National Liberals, demanded the repression of Bolshevism; the employment of experts and of non-partisans in the government; the creation of a labor chamber; and the revision of the Treaty. It emphasized private initiative against the collective motives of Socialism and demanded coöperation of all parties toward the restoration of economic life based on truly German ideals. The Centre attacked Communism on the one hand and the Kapp counter-revolution on the other, and calling itself the party of constitutional loyalty, in-

sisted on the maintenance of the constitution by armed forces if necessary and the suppression of any revolt on the part of revolutionists or reactionaries; denounced class hatred and class rule and insisted on equal rights for all. The Democratic party, formerly the Progressive People's party, also called for the coöperation of all classes. It demanded the restoration of German industry, religious freedom, secularization of public schools, personal initiative and individual reward as against the collective spirit of Socialism; a genuine League of the Nations, including Germany; and the revision of the treaties with Germany and Austria. It opposed national centralization and insisted upon economy in national finance. The Social Democratic party consisting of the Majority or Moderate Socialists, called for socialization of industry by popular will, heaviest possible taxation of capital, and centralization of power, and denounced the schemes for the restoration of monarchy. The Independent Socialists, the Left wing of the Social Democratic party, demanded a national army of workingmen, liberation of persons arrested for radicalism, disarming and punishment of counter-revolutionists, socialization of all industries, and government seizure of large estates. The Communists, the extreme Left, demanded complete abolition of capitalism, and the suppression of the power of the middle class and discredited the use of parliamentary methods. Of the above parties, the only one that pronounced itself frankly in favor of fulfilling the terms of the treaty was the Independent Socialists, although the Majority Socialists had declared that one of the purposes of the heavy taxation of capital was that the terms of the Treaty might be fulfilled.

ELECTIONS. In the June elections held under the new franchise law, over 25,000,000 votes were cast and 470 members of the Reichstag were elected. The apportionment among the various party groups with the popular vote of each was as follows: Majority Socialists, 110 (popular vote 5,531,137); Independent Socialists, 80 (popular vote 4,809,862); Centrists 67 (popular vote 3,500,800); German Nationalists, 65 (popular vote 3,638,851); German People's party, 61 (popular vote 3,456,131); Democrats, 45 (popular vote 2,152,509); Christian Federalists (Catholic Conservative party of the Rhineland), 21 (popular vote 1,254,963); Guelphists, 5 (popular vote 318,104); Communists, 2 (popular vote 438,199); Bavarian Peasants' party, 4. In Greater Berlin, the municipal elections held in June, gave the two Socialist groups in the city council 125 out of 225 seats.

NEW MINISTRY. A week after the elections the ministry retired and was succeeded by a new cabinet under Konstantine Fehrenbach as Chancellor. He had formerly been president of the Reichstag. On June 25th he formed a ministry out of representatives of the Democratic, Catholic, and People's parties, which was constituted as follows: Chancellor, Herr Fehrenbach; Minister of Justice and Vice-Chancellor, Herr Heinze; Foreign Affairs, Dr. Walter Simons; Finance, Dr. Wirth; Interior, Herr Koch; Defense, Herr Gessler; Transport, General Groener; Food, Herr Hermes; Posts and Telegraphs, Herr Giesberts; Economics, Herr Scholz; Treasury, Herr von Raumer. The new Reichstag met June 25th, and chose as president, Paul Löbe, a Majority Socialist and as vice-president, Wilhelm Dittmann.

ECONOMIC CONDITIONS. At the beginning of

October it was estimated that about 1,000,000 persons were unemployed and 1,500,000 working only half time. At the same time enormous profits were attributed to various industrial plants, especially to the textile mills. A plan was undertaken in September by the Minister of Economics for socializing in part the coal mines and there were reports that a plan for the conscription of labor was under consideration. Other plans proposed were the lending of money to small manufacturers by means of municipal savings banks, measures for nationalization of mines, etc. A great meeting of representatives from the shop councils established by national law in 1919 was held in the autumn, comprising some 1100 delegates, who represented about 8,000,000 organized workers and 15 leading groups of industries. The spirit of the congress favored the adoption of measures for extending workingmen's control over industries, but the extreme views of the Communists did not prevail and the control of the congress remained in the hands of the Majority Socialists and the Independent Socialists. (See SOCIALISM.) There was a strike early in October on the part of the clerical force engaged on the non-Socialist newspapers of Berlin as a protest against the proposed reduction of wages, and it resulted in a victory for the strikers. Strikes on the street car lines were reported in Berlin, Dresden, and Leipzig. There was some distress at this time owing to the shortage of potatoes and it was found that the cessation of government control of trade in potatoes had not had satisfactory results. It was also reported by the national grain bureau that the grain crop would not suffice for domestic needs, but would amount only to about 7,000,000 tons, and that 2,000,000 tons of breadstuffs would have to be imported. The rye crop was also disappointing.

FINANCIAL CONTROVERSIES. The condition of the German finances was a subject of endless discussion and as fast as any statement was made by the Germans to the effect that they were in no condition to pay their obligations direct contradictions appeared in the French press. (See above paragraphs on *Finance*; and *WAR OF THE NATIONS*.) In October a leading German newspaper commenting on the proposal that Germany should declare herself bankrupt, said that in that case the foreigners, sustained by the Treaty, would immediately seize upon the financial organs of Germany and administer German finances in their own interests. In France the view was held that Germany had brutally abused this argument of insolvency; that it was simply a part of her plan to prevent the execution of the Treaty. Thus it was said that after the conference of Spa, the German press had begun a campaign against the provisions of the Treaty in respect to coal, although many Germans admitted that these clauses could be readily executed if the government so desired. The events showed that the clauses could be executed. It had already been said by a prominent German financier that the means by which German statesmen were trying to prove that they could not pay the indemnity were ridiculous, and along with other experts he published estimates in June, 1919, showing that an indemnity of 1,000,000,000,000 marks did not exceed the financial capacity of the country. French commentators contrasted this estimate with that of Mr. Keynes in his widely read book on *The War and Economic Reconstruction* in which he estimated that Ger-

many, at the most, could pay 2,000,000,000 pounds sterling which was subject to various reductions. It was pointed out that since the German financier had shown that Germany could pay more than twice that, it followed that Mr. Keynes was more than twice as German as the Germans themselves. In short, Germany was not insolvent but was making every effort to appear so. It was true that a considerable amount of assets had been sequestered in the countries of the Allies during the war. Nevertheless, even if Mr. Keynes was trying to exaggerate the liabilities of Germany, he had admitted that foreign securities in the possession of Germans and immediately available, amounted to no less than 250,000,000 pounds sterling.

SAXONY. In the elections of November, the Majority Socialists lost nearly one-half of their strength, having 27 representatives in parliament as compared with 42 before. The bourgeois parties elected 47 deputies. The popular vote, however, stood 1,029,083 for the parties of the Left, and 1,011,108 for the bourgeois parties.

BAVARIAN MOVEMENT FOR FEDERALISM. Some alarm was felt in government circles at Berlin at the growth of the Bavarian demand for a reconstitution of the empire. In October a congress of the Bavarian popular party was held at Bamberg, at which a programme of federalism was proposed. The congress while declaring its loyalty to the empire demanded the establishment of a federal system with equal representation of the several states, as in the former Bundesrath, but without the preponderance of Prussia. Each state was to determine its own constitution and government. Imperial laws were to apply only through the laws of the states and the functions of the imperial government were to be adapted to the administration system of each state. The several states were each to have the right to conclude treaties, send their own representatives to foreign countries, determine and execute their own financial policies, and to control their respective contingents to the imperial military and police forces. This plan, supported by the strongest party in Bavaria, was in effect a condemnation of the Weimar constitution. Attacks were made upon it by the leaders, who declared that the centralized system set up by the Socialists had brought about a condition of political chaos and was not to be endured. A federal system was demanded because it alone would save the empire from disintegration, and because also it would afford the means of solving the problem of Austria. The more conservative elements in Bavaria were behind the movement and it had the support of influential French journals, which here, as everywhere else, took the side of those who tended toward reaction. On November 16th it was reported that the country was in danger of a revolution on the part of the right wing or monarchists for the purpose of setting up an independent state free from German control, under a regency which might when desired give place to a king, and form an alliance with France. It was said at the time that the new movement was relying on France for aid, French propaganda having been carried on there for a long time successfully.

MAXIMILIAN HARDEN. The celebrated director of *Zukunft* whose fearless criticisms of the government were frequently quoted in the Allied press during the war became again the subject of wide comment on his attacks on the policy of

the party in control. The articles written by him were widely quoted in October and November. They again showed him on the side of the Allies. He characterized the war as a tragic blunder. His view was that the Emperor was not responsible, but had been dragged into the war by the military party. He himself would never have dared to embark upon it, being too cowardly, as he had clearly shown by his flight. Harden described him as a comic actor and said said they made the mistake in France of taking him seriously. As to the German atrocities during the war, he declared that the charges in respect to them were all true. He reported an interview with William in which, he said, the latter had asked for details in regard to the cruelties committed by Germans and when Harden gave him a list of these he exclaimed that he had known nothing about them at the time. "Who would have supposed," he said, "that German officers who were men of refinement would have acted like criminals of common law, and yet, it is the truth," he added. The Emperor went on to say that he had refused personally to sign the famous manifesto of the intellectuals and that he had always believed that German troops had violated the neutrality of Belgium. As to Germany's payment of the indemnity, Harden maintained that it was impossible. It would be useless to turn Germans into slaves for several generations and that was what this demand really meant.

GERSTER-GARDINI, ETELNA. (MADAME GARDINI). Hungarian singer, died at Bologna, Italy, August 20. She was born at Kaschau, Hungary, in 1855, studied in Vienna, and made her first appearance in 1876 in the opera *Rigoletto*. She afterwards sang with great success in France, Italy, and Germany, and in 1878, 1883, and 1887 made tours of the United States as well. In 1896 she opened a singing school in Berlin. She was connected with the Institute of Musical Art in New York City after 1905.

GHEEN, EDWARD HICKMAN. American naval officer, died at Washington, D. C., August 10. At the time of his death he had the rank of rear-admiral. He was born in Delaware County, Pa., Dec. 11, 1845; graduated at the Naval Academy, 1867; and had risen to the rank of commander, March 28, 1898. He had meanwhile served on the flagship *Tennessee*, on the *Yantic* in the North Atlantic squadron, and on the *Minneapolis*, also at various shore duties, including work in the hydrographic office and the Philadelphia navy yard. He commanded the *Frolic*, June 23 to Sept. 27, 1898, and the *Marietta* in the Asiatic station, June 20, 1899 to April 29, 1901. He was afterwards engaged in lighthouse inspection duty and naval recruiting.

GIBRALTAR. A narrow peninsula on the southwest coast of Spain which commands the entrance to the Mediterranean; comprising the Rock of Gibraltar, a British crown colony. Area of the colony, $1\frac{3}{4}$ square miles; fixed civil population, estimated Jan. 1, 1919, 16,096 (7828 males and 8268 females), comprising for the most part descendants of Spanish and Italian settlers; alien population about 1867. The religion of the permanent inhabitants is for the most part Roman Catholic. The colony contains 16 government-aided elementary schools and a number of private English schools. In 1918-19 the pupils numbered 2603. Revenue (1918), £158,694; expenditure, £133,387; total tonnage

entered, 17,271,975; cleared, 16,044,352. The commerce consists chiefly of transit trade and the supplying of coal to ships. Gibraltar is a coal- ing station and important naval base and a valuable strategic point.

GIBSON, MARGARET DUNLAP. British Oriental scholar, died, January 11. She was born in Scotland and in 1883 married Rev. Thomas Young Gibson, translator of Cervantes' poetry; and traveled in the Near East, visiting Sinai six times. She edited Arabic versions of St. Paul's Epistles; the Acts, etc., and published a catalogue of Arabic manuscripts, volumes of Arabic and Sinaitic apocrypha; and various learned works on both languages; also commentaries on the Acts (1913); and on St. Paul's Epistles (1916). In 1915 she was medallist of the Royal Asiatic Society.

GIDDENS, GEORGE. Actor, died in New York City, November 21. During nearly 60 years he was a prominent figure on the stage, being regarded at the height of his career as one of the leading actors in low comedy parts. He was born at Bedford, England, June 17, 1855; educated at the national schools and entered upon a theatrical career at Edinburgh. He came to the United States with Sir Charles Wyndham in 1871, remaining here for several seasons. He was in the Criterion Theatre until 1894 and became one of the favorites of the English stage. After 1896 he spent the greater part of his time in the United States. Among the many plays in which he appeared with success may be mentioned: *Dandy Dick Cyrano*, *The Noble Lord*, *Pomander Walk*, and *Daddies*.

GIFTS AND BENEFACTIONS TO COLLEGES AND UNIVERSITIES. See UNIVERSITIES AND COLLEGES.

GILDEA, Sir JAMES. British philanthropist, died in London, England, November 6. He was born at Kilmaine, Ireland, June 23, 1838, and was educated at Cambridge. In the Franco-German war, he was active on behalf of the society for aid to the sick and wounded and he subsequently raised funds for the relief of dependents on the victims of the Zuhur War and the Afghan War. He was treasurer of these funds and of others for Indian relief and he founded the Soldiers' and Sailors' Families' Association, of which he was chairman after 1886. In 1914-17 £2,500,000 was placed in the hands of this association which meanwhile had developed many branches and become an elaborate organization. His writings include treatises on the Order of St. John of Jerusalem, The St. John Ambulance Association, and other subjects connected with philanthropic activity, including the record of the work of the Soldiers' and Sailors' Families' Association, from 1885 to 1916.

GITTINGS, JOSEPH H. American organist and teacher, died in Pittsburgh, May 6. He was born in England in 1848. For over 30 years he was organist at the Third Presbyterian Church in Pittsburgh, and for 20 years professor of music at the Pennsylvania College for Women. As a local manager he introduced to Pittsburgh many of the most noted artists (Patti, Carrefio, Paderewsky, etc.).

GIUSTINIANI, PHILIP. See ROMAN CATHOLICS.

GLASS. See CHEMISTRY, INDUSTRIAL.

GLENCONNER, EDWARD PRIAULX TENNANT, First Baron. Lord High Commissioner to the General Assembly of the Church of Scotland, died

in London, England, November 21. He was the brother-in-law of the former premier, Mr. Asquith. He was born May 31, 1859; educated at Eton and at Trinity College, Cambridge, and studied law. Afterwards he traveled extensively in the East and in America. He sat in Parliament from 1906 to 1910 and was regarded as one of the wealthiest members of the House of Lords, the family fortune having come from the chemical industry. His estate included some 5200 acres. His sister, Margot, wife of Mr. Asquith, published a volume of memoirs much talked of in 1920.

GLENN, ROBERT BRODNAX. Former governor of North Carolina, died, May 16. He was born in Rockingham County, N. C., Aug. 7, 1854; studied at Davidson College, N. C., and the University of Virginia; and began the practice of law at Danbury, N. C., in 1878. He was a member of the State Legislature in 1881, United States district attorney, 1893-1897, and Governor of North Carolina 1905-09. He was one of the Democratic electors for Cleveland in 1884 and 1892.

GLOBE FREE CONCERTS. See MUSIC, General News.

GOFF, NATHAN. Former Senator, died, April 23. He was born at Clarksburg, W. Va., Feb. 9, 1843; studied at Georgetown College; served in the Union army during the Civil War, rising to the rank of major; and was admitted to the bar in 1866. He was Republican candidate for governor in 1876 and in 1881 and was appointed Secretary of the Navy in the Hayes cabinet. From 1883 to 1889 he was a member of Congress. From 1892 to 1911 he was United States Circuit Judge; from 1912-13 Judge of the United States Circuit Court of Appeals; served as Senator, 1913-19.

GOLD. UNITED STATES. The following preliminary figures for gold production in the year 1920 were supplied by the Bureau of the Mint and the United States Geological Survey:

State or territory	Gold Fine ounces	Value
Alaska	380,034	\$7,856,000
Alabama	10	200
Arizona	289,118	4,943,000
California	692,019	14,805,300
Colorado	368,298	7,613,400
Georgia	53	1,100
Idaho	22,509	465,300
Illinois	0	0
Michigan	0	0
Missouri	19	400
Montana	88,971	1,839,200
Nevada	171,968	3,554,900
New Mexico	22,417	463,400
North Carolina	53	1,100
Oregon	46,687	965,100
South Carolina	14	300
South Dakota	203,243	4,201,400
Tennessee	280	5,800
Texas	5	100
Utah	100,446	2,076,400
Washington	7,198	148,800
Wyoming	10	200
Philippines	51,568	1,066,000
Porto Rico	97	2,000

2,395,017 * 49,509,400
Compared with 1919 production these figures indicate reduction in gold output of \$10,824,000.

WORLD PRODUCTION. The production and distribution of gold was an important topic in economic discussion and in world industrial affairs generally in 1920. The estimated production for the year was \$339,400,000, the lowest amount since 1903, when it was \$329,475,400, and of more immediate significance a decrease of \$25,-

700,000 from \$365,166,077 in 1919, and \$380,924,700 in 1918. For the decline in 1920 the United States was responsible, as shown above, for \$10,824,000, but all of the gold producing countries of the world, with the exception of Canada which showed an increase of \$1,200,000, making its output some \$17,100,000, shared in the curtailment. But decreased gold production was not confined to 1920; it had been continuous since 1915, when it was \$473,124,590, amounting in five years to over \$130,000,000 or 28 per cent. In this decline the United States had participated to the extent of \$51,000,000 or nearly 40 per cent, while the decline in Africa was \$28,800,000 or nearly 22 per cent, and Australia showed a fall of almost the same amount or \$27,400,000. Russia of course in this interval dropped from \$28,000,000 to \$10,000,000. The Transvaal, Rhodesia, and other South African fields also shared in the decline but proportionately less. In other words the United States when the dollar remained at par was face to face with increasing production costs and could not participate in the exchange premium. The situation was one of great interest and accordingly attention may be directed with profit to the accompanying table included in an article on "gold" by H. N. Lawrie, Chief, Precious Metals Division of the American Mining Congress, in the Annual Review of the *Engineering and Mining Journal* (New York):

\$20.67 in the five year period 1915-20 it averaged but \$13.85. Therefore in order not to destroy the gold mining industry Representative McFadden introduced into Congress a bill aiming to restore for a period of five years the lost purchasing power by imposing for the benefit of the producer a tax of \$10 an ounce on gold for commercial purposes. It was feared that unless some remedial steps were taken that gold production in the United States would soon approach the vanishing point and there would be no encouragement for developing new deposits or for resuming work on those whose abandonment seemed necessary in 1920. In other words the gold industry required either a more rapid deflation than was taking place or else some artificial assistance until the normal should be reached. In fact there was a decreased metallic reserve balance in United States currency, 50 per cent of which was but paper promises to pay.

GOLD PRODUCTION OF THE WORLD, 1901-1920					
1901	.....	\$260,877,429	1911	.....	\$459,377,300
1902	.....	298,812,493	1912	.....	474,333,268
1903	.....	329,476,401	1913	.....	462,669,558
1904	.....	349,088,293	1914	.....	451,582,129
1905	.....	378,411,754	1915	.....	473,124,590
1906	.....	405,551,022	1916*	.....	454,176,500
1907	.....	411,294,458	1917*	.....	419,422,100
1908	.....	443,434,527	1918	.....	380,924,700
1909	.....	459,927,482	1919	.....	365,166,077
1910	.....	454,213,649	1920	.....	338,000,000

* As reported by the Director of the Mint. 1920 estimated.

GOLD PRODUCTION OF THE WORLD CALENDAR YEARS

	Millions of dollars				Increase or Decrease	
	1915	1918	1919	1920	(+)	(-)
United States	101.0	68.6	60.3	50.0	1919-1920 -10.3	1918-1920 -51.0
Canada	18.9	14.5	15.9	17.1	+ 1.2	- 1.8
Mexico	6.6	16.8	15.2	13.2	- 2.0	+ 6.6
Total North America	126.5	99.9	91.4	80.3	-11.1	-46.2
Central America	8.0	8.4	3.8	3.0	- 0.3	0.0
South America	14.3	14.1	14.1	14.0	- 0.1	- 0.3
Russia	28.6	12.0	12.0	10.0	- 2.0	-18.6
Balance Europe	1.6	0.7	0.8	0.8	- 0.0	- 0.8
Total Europe	30.2	12.7	12.8	10.8	- 2.0	-19.4
Australasia	49.4	30.8	26.1	22.0	- 4.1	-27.4
British India	11.5	10.0	10.5	9.4	- 1.1	- 2.1
Balance Asia	17.9	15.5	13.1	11.1	- 2.0	- 6.8
Total Asia	29.4	25.5	23.6	20.5	- 3.1	- 8.9
Transvaal	188.0	174.0	172.2	168.6	- 3.6	-19.4
Rhodesia	18.9	18.1	12.3	11.5	- 0.8	- 7.4
Balance Africa	10.7	9.9	9.3	8.7	- 0.6	- 2.0
Total Africa	217.6	197.0	193.8	188.8	- 5.0	-28.8
Total for world	470.5	383.6	365.2	339.4	-25.7	-131.1

Years 1915-1918-1919 from Report of the Director of the United States Mint. The 1920 estimate is by H. N. Lawrie.

With gold production so widely distributed and the dollar taking the place of the pound sterling as the world's standard it was but natural that the question of the low rates of exchange prevailing should affect the gold mining industry. Thus gold from Africa and Austria was sold on the basis of the United States standard, which with the advantage enjoyed by America meant a substantial premium in pounds for the producers, an advantage as already stated in which the United States producer did not participate.

The decline of value for gold in the United States can be appreciated from the statement that while its purchasing power in 1914 was

The Federal Reserve Board announced a net gain of \$106,600,000 in the stock of gold in the United States during 1920 as against a net loss for 1919 of \$291,700,000. Gold imports for 1920 amounted to \$428,700,000 as compared with \$76,500,000 for 1919, while gold exports amounted to \$322,100,000 as against \$368,200,000 in 1919. Of the total gold imports for the year 64 per cent came from Great Britain, which included \$108,500,000 formerly held by the Bank of England for the Federal Reserve Bank. Nearly 60 per cent of the gold exports for year were to Asiatic countries and of this nearly 30 per cent went to Japan. See FINANCIAL REVIEW.

GOLD COAST. A British colony of Africa on the Gulf of Guinea between the French Ivory Coast and Togoland with a coast line of 334 miles, comprising besides the colony proper, Ashanti, and a protectorate. Total area about 80,000 square miles: population, in 1919, 1,503,386, of whom the European in 1915 numbered 2206. The capital and chief town is Accra (19,585) and other large towns are Cape Coast Castle (11,364), and Secondee (7725).

The following table shows the imports, exports, revenue, and expenditure for 1915 to 1918 inclusive:

	1915	1916	1917	1918
	£	£	£	£
Imports *....	4,509,538	5,999,749	3,886,480	2,919,915
Exports *....	6,943,681	5,816,527	6,846,925	5,818,681
Revenue....	1,456,180	1,835,989	1,624,124	1,298,674
Expenditure.	1,627,015	1,465,946	1,424,279	1,809,486

* Including bullion and specie.

The chief imports in 1918 were cotton goods, machinery, spirits, hardware, carriages, building materials, soap, and oil; and the chief exports were cocoa, gold and gold dust, kola nuts, and rubber. The United Kingdom had the greatest share of the trade. The imports from the United Kingdom in 1918 were £2,125,002 and the exports to the United Kingdom in 1917 £3,588,743. The imports from the United States in 1918 were £615,673 and the exports to the United States in 1917 were £1,005,204. The recovery from the war was rapid as was indicated by the fact that the foreign trade of 1919 made a new record. During that year the value of sea-borne trade was \$91,221,525, an increase of 143 per cent over 1918. Deducting specie, etc., the total value of the commercial foreign trade was \$86,004,010, an increase of 161 per cent over the preceding year. The largest item was the export of cocoa, which amounted to \$40,283,444. The imports during 1919 amounted to \$38,670,010, as compared with \$15,851,438 in 1918. The chief increases in value were in cotton goods; bags and sacks; provisions; motor cars; flour; railway plant and rolling stock; bread and biscuits. In 1919 Great Britain supplied 74 per cent of the imports and the United States 21 per cent. In 1919 the United States for the first time received a larger portion of the cocoa exports than Great Britain. In that year Great Britain received 46 per cent of the total exports and the United States 32 per cent. The shipping entered and cleared in the foreign trade in 1918 had a tonnage of 983,994 of which 953,164 was British. There is a government railway 108 miles in length from Secondee to Coomassie, with branches of 19 miles and 5 miles respectively, and there is a line from Accra to Tafo, 65 miles in length. Further lines were in process of construction. Ashanti was annexed by Great Britain Sept. 26, 1901, and was placed under the same central administration as the Gold Coast, but with its own laws and ordinances. Its chief town is Coomassie, with a population of about 24,000. There is a considerable production of gold and a rich timber supply including valuable woods. The northern territories lie to the east and south of the French possessions and to the west of Togo. They were placed under British protection in 1901 and are directly under a chief commissioner whose headquarters are at Tamale. The governor of the Gold Coast at the beginning of 1920 was Brigadier-general F. G. Guggisberg.

GOLF. The growing popularity of golf was

attested in 1920 by the thousands of recruits gained by the sport and by the large number of new clubs which were organized especially in the United States. For the first time in many years the play had a distinct international flavor. The United States sent a team to England to take part in the English amateur championship while England in turn had representatives in both the United States open and amateur tourneys.

In the English amateur tilt Robert A. Gardner, U. S., was beaten in the final round by Cyril Tolley, England. The two players were all square at the end of the 36th hole, but the Englishman won out on the 37th.

The United States open tourney played at Toledo, Ohio, resulted in a triumph for Edward Ray of England, whose score was 295. Jock Hutchinson of the Glen View Club, United States, Harry Vardon, England, Leo Diegel, Lake Shore Club, U. S., and Jack Burke, St. Paul Club, U. S., each had a total of 296. Other scores were: Jim Barnes, Edgewater Club, 298; Charles G. Evans, Edgewater Club, 298; Robert T. Jones, 2d., Atlanta, 299; W. MacFarlane, Port Washington, 299; Robert McDonald, Bob O'Link Club, 300.

Charles G. Evans captured the United States amateur tourney, defeating Francis G. Ouimet in the final round by seven and six. Four British stars including Cyril Tolley, the British amateur champion, competed in this tourney but all were early eliminated.

The results of other prominent tourneys in the United States were:

Women's, Miss Alexa W. Stirling, Atlanta, defeated Mrs. W. A. Gavin, Bay Shore, L. I., 6 and 5; Western Amateur, Charles G. Evans defeated C. Wolff, 5 and 4; North and South Amateur, Francis G. Ouimet defeated S. J. Graham, 5 and 4; North and South open, Fred McLeod won with a score of 298; Southern Amateur, Robert T. Jones, 2d., defeated E. Watkins 11 and 10; Metropolitan Amateur, E. Sawyer defeated G. W. White at the 37th hole; Metropolitan Women's, Mrs. Q. F. Feitner defeated Miss Georgianna Bishop, 2 and 1; Metropolitan Open, Walter Hagen defeated Jim Barnes in play-off of tie, 70 to 74.

The English Open championship was won by George Duncan, with Sandy Herd second. Edward Ray finished third. Miss Cecil Leitch captured the Great Britain's women's title by defeating Miss Molly Griffith in the final round, 7 and 6; Walter Hagen, U. S., carried off the French open championship.

In the matches for the Leslie Cup Pennsylvania was victorious, defeating New York eight matches to seven. New York in the meantime had triumphed over Massachusetts by the same score. The contest for the Devonshire Cup resulted in a victory for the United States over Canada by a score of 20 to 15.

Princeton won the intercollegiate championship with Dartmouth second and Harvard third. The individual winner was J. W. Sweetser, Yale, who defeated J. C. Ward, Williams, 4 and 3.

GONCOURT, PRIX DE. See FRENCH LITERATURE.

GONDRA, MANUEL E. President of the republic of Paraguay, inaugurated at Asuncion on August 15. He was born Jan. 1, 1872; educated at the National College; specialized in political subjects and wrote a number of valuable treatises within that field. He was minister to Brazil,

1905 to 1908, and Minister of Foreign Affairs, 1910 to 1918. For a short time he served as president, in 1910. In 1918 he was minister to the United States, holding that office at the time of his election. See PARAGUAY.

GOODELL, THOMAS DWIGHT. University professor and classical scholar, died, July 7. He was born at Ellington, Conn., Nov. 8, 1854; graduated at Yale College in 1877, and studied in Europe. He became assistant professor of Greek at Yale in 1888 and was made professor in 1893. In 1911-12 he was president of the American Philological Association. Besides Greek text books he published *Chapters on Greek Metric* (1901) and a Greek festival hymn for Yale University (1901).

GOODRICH, ALFRED JOHN. American authority on music, died in New York City, April 8. He was born at Chilo, Ohio, in 1847, and became a professor of musical theory, teaching in many of the leading musical institutions and serving for two years on the faculty of the Martha Washington College, Va. He wrote among other works, *Music as a Language* (1888); *Complete Musical Analysis* (1889); *Analytical Harmony* (1894); *The Theory of Interpretation* (1898); *Synthetic Counterpoint* (1903).

GOODYEAR INDUSTRIAL UNIVERSITY. See UNIVERSITIES AND COLLEGES.

GORDON, CLARENCE. Author, died at Sharon, Mass., November 26. He was born in New York City, 1835, and graduated from the Lawrence Scientific School in 1855. After living successively in Savannah and Boston, he settled in Newburgh, N. Y., where he remained until 1893. From 1894 to 1903 he was engaged in settlement work in New York City. He wrote a number of works of fiction including three juvenile stories under the pen name of "Vieux Moustache."

GORDON-BENNETT TROPHY. See AERONAUTICS.

GORGAS, MAJOR-GENERAL WILLIAM CRAWFORD. Surgeon-General, United States Army, from 1914 to 1918, celebrated as chief sanitary officer of the Panama Canal, died in London, July 4. His death followed a stroke of apoplexy on May 29. He was born in Mobile, Alabama, Oct. 3, 1854, the son of a general in the ordnance department of the Confederate Army; graduated at the University of the South in 1875, studied medicine in New York where he received his degree from Bellevue Hospital Medical College in 1879; was interne at Bellevue Hospital, 1878-80; and commissioned as surgeon in the medical corps of the United States Army, June 16, 1880. During the Spanish-American War, he served as major and brigade surgeon of volunteers, and was raised to the rank of major in the regular army, July 6, 1898. He was the chief sanitary officer of Havana from 1896 to 1902 and in this capacity he applied to measures of preventive sanitation the discovery of the late Major Walter Reed in regard to mosquitoes as carriers of yellow fever. It was reported that Havana was freed from the yellow fever after three months of his work. He was rewarded by promotion to the rank of colonel and appointed to the office of assistant surgeon-general by a special act of Congress, March 9, 1903. When the Panama Canal was undertaken, he was made chief sanitary officer March 1, 1904, and he there applied the same methods as he had employed

in Cuba, to the sanitation of the Isthmus which down to that time had been one of the plague spots of the world. Yellow fever was said to have been eradicated in less than a year and not a case of it was reported after May, 1906. He was a member of the Canal Commission from 1907 and was in charge of the administration until the winter of 1913. He then visited South Africa for the purpose of finding means of checking the spread of pneumonia among the natives working in the mines of the Rand. On Jan. 16, 1914, he was appointed surgeon-general and he was raised to the rank of major-general in 1915. His funeral took place at St. Paul's Cathedral, London.

GORIZIA. The Italian name of Görz, see GÖRZ AND GRADISCA.

GORZ AND GRADISCA. A crownland of Austria before the dissolution of the Austro-Hungarian empire at the close of 1918. For statistics see preceding YEAR BOOKS. After 1918 it was incorporated in the new state Jugo-Slavia.

GOUCHER COLLEGE. An institution of the higher learning for women, at Baltimore, Md., founded in 1885. The enrollment for the regular fall session was 834. There were 70 members in the faculty with three additions in the second semester. The productive funds of the institution amounted to about \$1,200,000 and the income for the year was \$262,000. There were 35,000 volumes in the library. The following additions were made: To Vanaheim Hall, laboratories for the Home Economics and Psychology departments and class rooms for the Mathematics department; and to Midgard Hall for the accommodation of 20 students. Four hundred thousand dollars was pledged by the General Education Board toward a total of \$1,000,000 to be raised for endowment. President, William Westley Guth, A.B., S.T.B., Ph.D., LL.D.

GOVERNMENT OWNERSHIP. See RAILWAYS.

GOW, ANDREW CARRICK. British painter, died, February 1. He was born June 15, 1848; became a member of the Royal Academy in 1868, and after 1869 exhibited continuously at the Royal Academy, of which he became an Associate in 1881. A partial list of his paintings is as follows: "The Relief of Leyden" (1876); "No Surrender" (1878); "The Last Days of Edward VI" (1880); "Cromwell at Dunbar" (1886); "The Garrison Marching out with the Honors of War; Lille 1705" (1887); "Flight of James II. after the Battle of the Boyne" (1888); "After Waterloo" (1890); "Queen Mary's Farewell to Scotland" (1892); "The Queen's Diamond Jubilee at St. Paul's"; "Nelson Cartoon" in the Royal Exchange, etc.

GOYON, ED. See FRENCH LITERATURE.

GRAHAM LAND. See FALKLAND ISLAND, DEPENDENCIES OF.

GRAND RAPIDS, MICH. See GARBAGE.

GRANT, NOEL. British naval officer, died at Stanmore, England, March 6. He was born in 1868 and became a commander, 1902, and captain in 1908. Through his skillful manœuvring, he won an engagement early in the war, when he was in command of the *Carmania*. On Sept. 14, 1914, his vessel was engaged with the *Cap Trafalgar*, the first instance in the war of a conflict between armed merchant vessels. Both vessels were well armed, but had no armor protection. The *Cap Trafalgar* was sunk in mid-Atlantic after an action which lasted about 2½ hours.

GRAPHITE. According to preliminary estimates of the United States Geological Survey there was a heavy decline in the production of graphite in the United States in 1919.

The shipments of domestic graphite amounted to approximately 7717 short tons, valued at \$743,000, a decrease of about 41 per cent in quantity and 51 per cent in value from the figures for 1918. After the War Industries Board, on Aug. 10, 1918, ordered the use of at least 25 per cent of American graphite in crucible mixtures to be sold during the year 1919, the purchases of domestic and Canadian graphite were heavy, reaching 500 tons or more a month during August, September, and October, 1918. After the armistice was signed, however, on Nov. 11, 1918, an abrupt decline in shipments began, which was accelerated by the order of the War Trade Board of Jan. 16, 1919, removing all restrictions on purchases of graphite. This order naturally weakened the market, for customers were then already burdened by accumulated stocks. The cost of manual labor in the United States increased enormously in 1918 and 1919, but as the demand for graphite was weak and as the market was thrown open to foreign competition the producers were unable to raise their prices proportionately. Although marine freight rates had been increased, the producers of crystalline graphite in Ceylon and of flake graphite in Madagascar, by reason of cheap native labor and unusual conditions of foreign exchange, were able to market their product at prices that forced the smaller American producers to suspend production, so that at the close of the year 1919 only the strongest and best organized companies were able to continue operations.

DOMESTIC GRAPHITE SOLD IN 1915-1919
(Short tons)

	Quantity	Total Value
1915	4,718	\$429,681
1916	8,088	935,471
1917	13,593	1,167,879
1918	12,991	1,524,254
1919	7,717	743,000

Artificial graphite may be used for any purpose for which natural graphite is employed according to the United States Geological Survey except in the manufacture of large crucibles. Patents have been issued, however, for methods of manufacturing crucibles in which artificial graphite may be used. Artificial graphite is peculiarly adapted to the manufacture of certain graphite products, among them graphite electrodes, which are not made from natural graphite and for which the demand has greatly increased in recent years.

The quantity of domestic flake and amorphous graphite sold by producers in the United States in 1920 amounted to 9510 short tons. The value of the graphite sold in 1920 was about \$626,201. Operators in Colorado, Nevada, and Rhode Island reported sales of 4694 short tons of amorphous graphite in 1920 at an average price of \$10.60 a ton. This was \$3.52 per ton less than the average price in 1919. The sales of crystalline graphite in 1920 amounted to 9,632,360 pounds, valued at \$576,442. Alabama led in the production of crystalline graphite, the sales in 1920 amounting to 4,894,648 pounds, or 51 per cent of the total quantity sold in the United States.

GREAT BRITAIN. UNITED KINGDOM OF GREAT BRITAIN AND IRELAND. A constitutional monarchy whose capital is London. The term

Great Britain though applying literally only to England, Scotland, and Wales, is often used as above to mean the United Kingdom. To the United Kingdom are attached the Isle of Man and the Channel Islands. With all its possessions or dependencies, that is to say, the dominions, colonies, and other territories subject to the ultimate control of Parliament, it constitutes the British Empire.

AREA AND POPULATION. The area of the United Kingdom is 121,633 square miles including the Isle of Man and the Channel Islands. The population as estimated for June 30, 1914, just before the outbreak of the war, was 46,089,249 of whom 36,960,884 were in England and Wales, 4,747,167 in Scotland, and 4,381,398 in Ireland. The civil population for England and Wales was estimated for June 30, 1919, at 35,993,000, and the population of Scotland and Ireland respectively at 4,894,100 and 4,380,000. For details of population based on the 1911 census see preceding YEAR BOOKS. The estimated population of Greater London (about 693 square miles) in 1919 was 7,258,623 (civil population only); of the administrative county of London, 4,358,309. The estimated population of the three next largest cities of England in 1919 (civil population only) was as follows: Birmingham, 861,585; Liverpool, 772,665; Manchester, 741,068. The estimated populations of the two largest cities of Scotland in 1918, were as follows: Glasgow, 1,111,428; Edinburgh, 333,883. The estimated populations of the two largest cities in Ireland in 1919, were as follows: Dublin, 399,000; Belfast, 393,000. The movement of population in England and Wales for 1919 (provisional figures) was as follows: Total births, 692,680; deaths, 504,254; marriages, 369,007.

For Scotland it was: Total births, 106,263; deaths, 75,141; marriages, 44,126. For Ireland it was: Total births, 89,555; deaths, 78,757; marriages (1918), 22,570. In 1919 the total immigration was 201,504 as compared with 22,824 the year before, and the total emigration 193,601 as compared with 25,970 the year before. The above figures, however, refer exclusively to passenger traffic. After April 1, 1912, revised lists were issued showing the number of British emigrants (excluding persons temporarily absent) to places outside of Europe. In 1913 these numbered about 390,000 and in 1918 only 10,600. In 1919 they rose to 147,000. The emigrants of British nationality numbered about 86,000 in 1913, fell to 8800 in 1918 and rose to 93,000 in 1919. The chief non-European countries of destination for British subjects in 1919 were: British North America (89,102); the United States (33,765); Australasia (17,757); India and Ceylon (10,841); and British South Africa (7761). The majority of the aliens in 1919 who took ship from British ports went to the United States (14,967). The number of native Irish who emigrated from Ireland from May 1, 1851, to the end of 1918, was 4,319,693. The number who emigrated in 1913 was 30,967 and in 1918, 980.

EDUCATION. On July 31, 1918, the number of elementary schools in England and Wales was 21,467 and the number of pupils enrolled Jan. 31, 1918, was 5,966,213. The average attendance in 1917-18 was 5,184,000. In Scotland the elementary schools in 1917 numbered 3363, with 743,725 in attendance. In Ireland in 1917 the elementary schools numbered 8060, with 699,472 pupils enrolled and 488,785 in attendance.

The attendance at the universities was greatly diminished during the war, but the figures increased afterwards. The following table from the *Statesman's Year Book* for 1920, estimates the number of members in the teaching staffs and the number of students in the universities of the United Kingdom in 1919-20:

Universities	Number of professors, etc.	Number of students
England—		
Oxford	100	8,600
Cambridge	150	4,360
Durham	171	1,200
London	913	6,000
Manchester	290	2,550
Birmingham	100	1,500
Liverpool	224	2,540
Leeds	215	1,760
Sheffield	146	8,500
Bristol	210	1,000
Total for England	2,519	28,010
Scotland—		
St. Andrews	84	420
Glasgow	164	3,900
Aberdeen	110	1,520
Edinburgh	242	4,800
Total for Scotland	600	10,140
Ireland—		
Dublin (Trinity College)	88	1,350
Dublin (National)	200	1,800
Belfast	73	1,050
Total for Ireland	361	4,200
Wales	220	2,500
Totals of above	3,700	44,850

PRODUCTION. The total produce of the United Kingdom by crops is shown in the following table in thousands of quarters and thousands of tons:

United Kingdom	Wheat	Barley or Bere	Oats	Beans
1912 ^a	7,087	8,204	20,660	954
1916	7,472	6,612	21,334	893
1917	8,041	7,185	26,021	474
1918	11,643	7,760	31,196	931
1919 ^b	8,669	7,215	25,461	...

^a Pre-war year. ^b Provisional.

The following table from the *Statesman's Year Book* for 1920 shows the number and size of the holdings in 1919:

Size of holdings, 1919	England and Wales	Scotland	Great Britain
1-5 acres	81,193	17,345	98,538
5-50 acres	191,875	32,711	224,086
50-300 acres	130,225	23,242	153,467
Over 300 acres	18,875	2,545	16,420
Total	416,668	75,843	492,511

Size of holdings	Leinster	Munster	Ulster	Connaught	Ireland
Not exceeding 1 acre	39,131	33,261	32,022	8,373	112,787
Above 1 and not exceeding 5 acres	13,085	9,678	16,887	8,469	47,619
Above 5 and not exceeding 10 acres	10,645	8,076	27,920	19,421	66,062
Above 10 and not exceeding 15 acres	8,211	7,062	25,072	19,411	59,756
Above 15 and not exceeding 30 acres	18,009	20,221	48,593	36,306	123,129
Above 30 and not exceeding 50 acres	13,268	20,494	24,555	14,071	72,388
Above 50 and not exceeding 100 acres	13,055	22,406	15,427	6,588	57,476
Above 100 and not exceeding 200 acres	6,889	9,789	4,112	2,369	23,159
Above 200 and not exceeding 500 acres	2,966	2,901	1,153	1,211	8,231
Above 500 acres	666	481	310	510	1,967
Total number of holdings	125,925	184,869	195,551	116,729	572,574

The above table, from the same source, shows the number and size of the holdings in Ireland in 1917.

See AGRICULTURAL EXPERIMENT STATIONS; AGRICULTURAL EXTENSION WORK; and AGRICULTURE.

The following figures for cultivated area live-stock and produce are from the *Statesman's Year Book* for 1920:

Cultivated Area	1918 Acres	1919 Acres
Corn crops ^a	10,950,985	10,093,243
Green crops ^b	4,085,164	3,894,590
Flax ^c	163,093	115,039
Hops ^d	15,666	16,780
Small fruit	90,939 ^e	84,632 ^e
Bare fallow	414,124	658,443
Clover and mature grasses ..	5,520,796	.....
Permanent pasture	25,045,981	.....
Total	46,266,748	.....

^a Corn crops are wheat, barley, or bere, oats, rye, beans, peas. ^b Green crops are mainly potatoes, turnips and swedes, mangold, cabbage, kohlrabi, rape, vetches or tares. ^c Mainly in Ireland. ^d All in England. ^e Including Irish orchards.

The live-stock in 1919 are shown in the following table:

Live stock	1913 (pre-war) Number	1919 ^b Number
Horses ^a	1,874,264	1,914,933
Cattle	11,936,600	12,491,427
Sheep	27,629,206	25,119,220
Pigs	8,305,771	2,925,098

^a Horses for agriculture, mares kept for breeding, and unbroken horses.

COST OF LIVING. The following information in regard to the cost of living in 1920 was supplied by the United States Bureau of Foreign and Domestic Commerce: According to the preliminary figures issued by the British Board of Trade, the index number of wholesale prices in the United Kingdom for 1920 worked out at 371.4.

Peas	Potatoes	Turnips and Swedes	Mangold	Hay
423	7,605	25,313	9,276	15,395
261	5,469	23,318	9,010	15,198
278	8,604	24,842	10,369	13,163
441	9,223	22,835	10,821	12,332
...	6,311	22,823	7,795	10,717

This was the highest recorded in the statistics and shows a rise of 25 per cent compared with 1919. From the beginning until the middle of 1920 there was a general increase, but in August a decline set in and continued. The following table gives the index number for each year from 1871, calculated on the prices of 47 principal articles. It will be observed that, compared with the base

Year	Index No.	Year	Index No.	Year	Index No.
1871....	135.6	1889....	103.4	1907....	106.0
1872....	145.2	1890....	103.3	1908....	103.0
1873....	151.9	1891....	106.9	1909....	104.1
1874....	146.9	1892....	101.1	1910....	108.8
1875....	140.4	1893....	99.4	1911....	109.4
1876....	137.1	1894....	93.5	1912....	114.9
1877....	140.4	1895....	90.7	1913....	116.5

year 1900, there was an upward tendency prior to the war:

Year	Index No.	Year	Index No.	Year	Index No.
1871....	135.6	1889....	103.4	1907....	106.0
1872....	145.2	1890....	103.3	1908....	103.0
1873....	151.9	1891....	106.9	1909....	104.1
1874....	146.9	1892....	101.1	1910....	108.8
1875....	140.4	1893....	99.4	1911....	109.4
1876....	137.1	1894....	93.5	1912....	114.9
1877....	140.4	1895....	90.7	1913....	116.5

Year	Index No.	Year	Index No.	Year	Index No.
1878....	181.1	1896....	88.2	1914:	
1879....	125.0	1897....	90.1	Jan.-July.	113.6
1880....	129.0	1898....	98.2	Aug.-Dec.	122.6
1881....	126.6	1899....	82.2	Year.....	117.2
1882....	127.7	1900....	100.0	1915.....	143.9
1883....	125.9	1901....	96.7	1916.....	186.5
1884....	114.1	1902....	96.4	1917.....	248.0
1885....	107.0	1905....	96.9	1918.....	267.4
1886....	101.0	1904....	98.2	1919.....	296.5
1887....	98.8	1905....	97.6	1920.....	371.4
1888....	101.8	1906....	108.8		

The coal and metals group, with the exception of copper, recorded advances, the index numbers for the group being 50 per cent above 1919, which itself was 36 per cent above 1918. Pig iron and coal advanced 28 per cent and 69 per cent, respectively, in 1920 over 1919. Raw textile materials were 36 per cent up compared with 1919. In the food, drink, and tobacco group the advance was nearly 20 per cent; British barley rose 17 per cent, beef by 20 per cent, mutton by nearly 40 per cent, sugar by 56 per cent, and tobacco over 36 per cent. Tea recorded a decrease. In miscellaneous articles, the rise of 10 per cent was mainly due to increases of 50 per cent in petroleum, 16 per cent in olive oil, 11 per cent in hides, and 28 per cent in bricks. On the other hand, cotton seed declined about 10 per cent and rubber 8 per cent—all comparisons on the 1919 numbers. Compared with 1913 the general index number in 1920 was nearly 219 per cent higher; coal and metals advanced 353 per cent; raw textile materials 276 per cent; food, drink, and tobacco 184 per cent; and miscellaneous nearly 222 per cent.

At the beginning of 1920 the cost of living, based on official average index figures, was higher than at the time of the armistice; subsequently these index figures indicated considerable appreciation, but at the close of the year tended to fall. During the closing months of 1920 there set in a certain amount of forced realization of accumulated stocks of various manufactured goods, with accompanying declines in wholesale prices, but for a considerable period little difference occurred in the retail charges. At the close of the year the cost of living was not only higher than at the time of the armistice but greater than at the end of September. See IRON AND STEEL, and PETROLEUM.

WAGES, ETC. Wage increases accorded to 7,600,000 workers in 1920 amounted to £4,693,000 per week—a record; for 1919 the corresponding figures were 6,160,000 workers and £2,432,000. These increases were distributed among the following trades:

Groups of trades	Work people affected		Weekly wage increase	
	1919	1920	1919	1920
Building	290,000	400,000	£205,000	£358,000
Mining and quarrying	1,160,000	1,280,000	620,000	1,328,000
Iron and steel smelting and manufacture ..	300,000	220,000	150,000	261,000
Engineering, shipbuilding, and other metal..	1,830,000	1,610,000	573,000	629,000
Textile	540,000	1,050,000	160,000	643,000
Clothing	490,000	720,000	174,000	229,000
Transport (excluding tramways)	370,000	890,000	96,000	573,000
Paper, printing, etc.	190,000	200,000	74,000	122,000
Chemical, glass, brick, pottery, etc.	220,000	270,000	64,000	120,000
Other trades	570,000	618,000	198,000	280,000
Public utility services *	800,000	850,000	118,000	150,000
Total	6,160,000	7,600,000	2,432,000	4,693,000

* Including tramway, gas, electricity, and water undertakings of both local authorities and private companies, and the road, sanitary, and other services of local authorities.

The figures for 1920 are provisional. As already mentioned, the year 1900 has been adopted as the base year of the series. The changes since that year in the index numbers of the 47 articles

embraced in the calculations, classified into four groups, are shown in the following table:

Year	Coal and minerals	Textiles (raw materials)	Food, drink, and tobacco	Miscellaneous	All articles
1900	100.0	100.0	100.0	100.0	100.0
1901	82.2	93.8	101.1	96.3	96.7
1902	76.1	92.8	101.4	92.5	96.4
1903	74.1	101.7	100.6	91.7	96.9
1904	70.9	112.9	101.2	88.3	98.2
1905	71.3	106.7	101.2	91.1	97.6
1906	73.8	121.1	101.0	95.6	100.8
1907	86.9	127.4	105.5	99.7	106.0
1908	78.5	109.8	107.0	94.8	103.0
1909	73.6	121.4	108.7	96.5	104.1
1910	76.6	136.2	109.2	104.3	108.8
1911	74.7	128.9	111.6	105.5	109.4
1912	84.9	119.6	119.9	110.1	114.9
1913	92.5	135.0	117.7	109.4	116.5
1914:					
Jan.-July ..	86.2	135.1	114.8	106.2	113.6
Aug.-Dec. ..	88.8	116.8	130.4	119.1	122.6
Year	86.7	128.8	120.9	111.3	117.2
1915	116.7	119.8	154.1	143.8	143.9
1916	165.8	180.1	189.4	204.0	186.5
1917	182.0	270.4	246.2	256.3	248.0
1918	204.9	354.4	259.3	268.6	267.4
1919	280.2	373.3	279.7	317.8	296.5
1920	419.3	508.1	335.1	352.2	371.4

In 1918 some 6,500,000 workpeople in these industries received advances amounting to about £3,200,000. In this connection the *Labor Gazette* said:

"The increase in numbers in 1920 as compared with 1918 is partly accounted for by the rise in the numbers employed in various industries as a result of demobilization and by the fact that, owing to the improvement in the numerical strength of the workers' organizations, larger numbers are affected by the changes in wages negotiated by such organizations, which form the great bulk of the changes recorded by the Ministry of Labor. But, even when due allowance has been made for these two factors, it is evident, from the great rise in the aggregate amount of increase recorded, that 1920 was a year of unprecedented advance in money rates of wages. It should be observed, however, that owing to the serious decline in employment in the closing months of the year actual weekly earnings in many industries were considerably lower at the end of 1920 than at the beginning of the year."

Following on the large reduction in 1919 in the hours of the working week, there was a further fall of 2,085,000 hours in 1920, the changes affecting 560,000 workpeople whose recognized full-time working week was reduced by an aver-

age of 3.7 hours. The outstanding reductions resulted from the adoption of a 44-hour week in the building trade in those districts in which it was not already in force, and of a 48-hour

week for workpeople in the wholesale clothing industry. The remaining changes resulted from the adoption of a shorter working week, usually of 48 hours, in a number of smaller industries. The following table shows the number of workpeople affected and the aggregate amount of the reduction in weekly hours in 1919 and 1920:

Groups of trades	Workpeople affected		Aggregate reductions in weekly hours	
	1919	1920	1919	1920
Building	211,000	282,000	965,000	994,000
Mining and quarrying	1,101,000	15,000	5,365,000	44,000
Metal	1,959,000	9,000	18,237,000	35,000
Textile	1,006,000	55,000	7,021,000	363,000
Clothing	214,000	130,000	1,052,000	422,000
Other trades	1,807,000	47,000	12,873,000	153,000
Public utility services	163,000	22,000	1,242,000	69,000
Total	6,461,000	560,000	41,755,000	2,085,000

The figures given relate to the normal hours of a full working week, and do not include the effect of the short-time working which, owing to the decline in employment, was in operation in many industries at the end of the year. See STRIKES AND LOCKOUTS; TRADE UNIONS; and UNEMPLOYMENT.

STRIKES AND UNEMPLOYMENT. The coal miners voted on March 10 at their national conference by a majority of 178,000 for a general strike and for direct action in order to enforce the nationalization of the mines. On the following day, however, the Trades Union Congress voted against this action by a majority of 2,820,000 and voted for legal political action by a majority of 2,717,000. In April the wages of the miners were increased by 20 per cent and soon afterwards the price of coal was increased. For further discussions of the coal strike, see the paragraphs on the *Government and the Coal Industry* under HISTORY below. As to the great railway strike of 1919, the agreement which had been called for in its settlement was concluded in January. This granted the railway men an increase of five shillings a week until Sept. 30 and then payment double the pre-war rate; accepted the principle of equal pay for the same work; and provided for periodical revision of the rate in response to changes in the cost of living. The railway unions demanded in April an all-round increase of £1 a week. The National Wage Board early in June granted increases ranging from two to 7 shillings over the existing rates. After the beginning of the coal strike, there was a great increase of unemployment in all industries. At that time it was estimated that about 4,200,000 persons were insured against unemployment under acts of 1911-16, of whom 114,771 were draw-

ing amount of unemployment and the government was engaged in measures to moderate its effects. The new Unemployment Insurance law went into effect November 8. By this, workmen who gained on an average less than about one thousand dollars a year were to receive assistance. It applied to about 12,000,000 workers over 16 years of whom 8,333,000 were men and 3,430,000 women. The fund is supplied by a contribution from the working people. Insurance was not to be paid for more than 15 weeks a year. This measure went considerably further than the previous one, which had applied only to about 4,000,000 workers. The former soldiers and officers constituted an unemployed class that gave considerable anxiety. In December it was estimated that about 295,000 ex-officers and ex-soldiers who had suffered injury were now capable of working, but were without employment, and a committee was actively engaged in trying to find situations for them. At that time over 20,000 business houses were inscribed in this movement to relieve the unemployment of the troops. The government had also taken measures to facilitate emigration of the troops and some 100,000 had already declared themselves willing to emigrate, the larger number choosing Canada and a considerable proportion choosing Australia, New Zealand, and South Africa. In many cases the new settlers took their families with them and it was estimated in December that no less than 150,000 persons had already emigrated or were about to do so. The government also placed at the disposal of the former soldiers lands in Great Britain having an area of about 170,000 hectares.

Toward the end of the year there was an alarm-

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Year	Imports	Exports	Re-exports	Total exports
1913	£768,734,788	£525,253,595	£109,566,731	£634,820,326
1919	1,626,156,212	798,638,362	154,746,315	953,384,677
1920	1,936,742,120	1,335,569,027	222,405,957	1,557,974,984

ing insurance benefits, etc., August 1. The number rose to 159,277 October 1, and in one week from that time (October 8) rose to 288,291. Besides that, certain trades unions reported on October 1, that the number of their employed members would be 36,017. It was estimated that about 1,100,000 miners went out of work at the beginning of the strike. On October 20, the number of persons receiving the out-of-work donations and unemployment insurance rose to 444,405. Manufacturing interests now began to take active measures against dumping, that is to say, the importation of cheap foreign goods, and

The total of all foreign trade, therefore, rose from £1,403,555,065 in 1913, and £2,589,540,889 in 1919, to £3,494,717,104 in 1920. Whereas the excess of imports over all exports in 1913 reached £133,914,413, in 1919 the difference had increased to £662,771,535, but in 1920 this was reduced to a balance in favor of imports of £378,767,136. Both the total imports and the total of all exports in 1920 was approximately two and one-half times greater than in the pre-war year. Imports showed an increase in 1920 of £1,168,007,381 over 1913, and of £310,585,908 over 1919;

British exports rose in 1920 by £810,315,432 over the pre-war year and by £536,930,665 over 1919, while reexports of foreign and colonial goods

similarly advanced by £112,839,226 and £57,659,642, respectively. The accompanying tables show imports and exports by main classifications.

Items	IMPORTS		
	1918	1919	1920
Food, drink and tobacco:			
Grain and flour	284,408,247	£151,676,095	£231,712,529
Feeding stuffs for animals	4,869,758	11,811,258	8,899,297
Meat	56,421,848	175,415,708	141,557,025
Animals, living, for food	305,063		
Other food and drink, nondutiable	82,434,285	162,613,494	174,759,050
Other food and drink, dutiable	58,683,367	175,948,249	174,768,302
Tobacco	8,032,562	41,653,708	85,676,570
Total	295,149,630	719,118,512	767,372,773
Raw materials and articles mainly unmanufactured:			
Coal	5,960	1,450	26,633
Other nonmetallic mining and quarry products and the like	3,114,389	5,124,977	9,694,119
Iron ore and scrap	7,454,253	11,985,185	20,799,861
Nonferrous metaliferous ores and scrap	12,578,118	18,942,195	17,711,627
Wood and timber	33,788,884	72,806,469	82,164,820
Raw cotton and cotton waste	70,570,547	190,771,416	256,765,237
Wool, raw, waste, woolen rags	37,736,434	104,753,205	98,957,397
Silk, raw, knubs, and noils	1,295,788	3,164,316	4,071,152
Other textile materials	18,455,397	25,653,870	32,727,174
Oilseeds, nuts, oils, fats, resins, and gums	29,418,299	91,569,887	82,224,592
Hides and skins, undressed	15,067,176	29,508,074	31,976,823
Paper making materials	5,815,803	16,549,424	33,278,000
Rubber	21,894,677	26,489,901	26,768,813
Miscellaneous raw materials and articles mainly unmanufactured	12,749,045	14,968,271	19,334,570
Total	269,939,720	606,783,540	711,500,618
Articles wholly or mainly manufactured:			
Coke and manufactured fuel	30,740	4,172	10,831
Earthenware, glass, abrasives, etc.	5,408,376	3,862,339	11,112,872
Iron and steel and manufactures thereof	15,889,963	11,613,292	29,005,826
Nonferrous metals and manufactures thereof	29,600,862	33,577,890	39,231,892
Cutlery, hardware, implements, and instruments	6,698,996	9,051,055	10,605,991
Electrical goods and apparatus	1,587,294	1,204,511	1,826,250
Machinery	7,266,649	15,020,082	19,961,401
Manufactures of wood and timber	3,583,187	4,309,807	8,630,977
Cotton yarns and manufactures	9,207,663	5,366,856	9,825,710
Woolen and worsted yarns and manufactures	10,019,579	3,171,031	17,772,023
Silk and silk manufactures	15,115,381	22,945,305	36,915,912
Manufactures of other textile materials	9,812,987	11,710,729	23,118,422
Apparel	11,173,143	7,446,059	15,033,291
Chemicals, drugs, dyes, and colors	13,335,795	21,041,551	35,315,326
Oils, fats, and resins, manufactured	13,797,671	43,587,131	77,000,749
Leather and manufactures thereof	11,630,421	38,006,137	20,514,814
Paper and cardboard	7,691,540	18,021,023	30,252,131
Vehicles (including locomotives, ships, and aircraft)	5,628,961	9,816,138	27,233,252
Rubber manufactures	8,616,348	3,000,967	7,102,510
Miscellaneous articles, mainly or wholly manufactured	19,943,316	38,498,728	34,432,968
Total	201,038,872	295,954,753	454,823,198
Animals, not for food	488,411	401,942	401,739
Parcel post, nondutiable articles	2,118,106	8,894,465	2,643,792
Grand total	768,734,739	1,623,156,212	1,936,742,120
Items	EXPORTS		
	1918	1919	1920
Food, drink, and tobacco:			
Grain and flour	£2,305,372	£,381,282	£2,779,046
Feeding stuffs for animals	2,169,500	804,841	1,017,104
Meat	1,196,209	628,650	860,973
Animals, living, for food	42,698	188	13,889
Other food and drink	24,785,594	24,288,550	37,092,037
Tobacco	3,376,472	5,166,962	9,180,105
Total	33,875,845	33,770,673	50,893,159
Raw materials and articles mainly unmanufactured:			
Coal	50,727,252	33,213,714	99,627,146
Other nonmetallic mining and quarry products and the like	868,614	866,585	2,404,566
Iron ore and scrap	418,566	321,270	630,159
Nonferrous metaliferous ores and scrap	167,505	72,792	2,204,072
Silk, raw, knubs, and noils	840,745	861,767	1,012,053
Wool, raw and waste, and woolen rags			3,098,523
Raw cotton and cotton waste	4,623,468	7,287,395	8,787,180
Wood and timber	119,942	138,179	94,314
Other textile materials	314,478	519,621	684,698
Oilseeds, nuts, oils, fats, resins, and gums	2,871,888	11,847,867	13,597,502
Hides and skins, undressed	1,886,305	1,625,901	4,032,307
Paper-making materials	958,435	906,670	2,516,654
Rubber		240,849	521,109
Miscellaneous raw materials and articles mainly unmanufactured	2,876,121	3,393,515	6,495,108
Total	66,173,319	111,290,529	145,655,391

<i>Items</i>	<i>1913</i>	<i>1919</i>	<i>1920</i>
EXPORTS			
Articles wholly or mainly manufactured:			
Coke and manufactured fuel	2,932,408	9,083,971	20,692,095
Earthenware, glass, abrasives, etc.	7,426,487	7,918,983	18,323,781
Iron and steel and manufactures thereof	55,350,747	64,428,510	128,942,618
Nonferrous metals and manufactures thereof	12,036,103	14,370,386	25,867,965
Cutlery, hardware, implements, and instruments	7,128,845	7,944,965	13,611,473
Electrical goods and apparatus	5,386,273	5,708,018	11,604,386
Machinery	38,602,474	30,741,551	63,457,987
Manufactures of wood and timber	2,041,640	1,151,800	2,835,604
Cotton yarn and manufactures	126,467,230	238,844,967	401,682,585
Woolen and worsted yarns and manufactures	35,709,970	95,634,442	134,969,462
Silk and silk manufactures	2,157,530	3,691,092	5,197,604
Manufactures of other textile materials	16,069,994	26,680,122	45,087,826
Chemicals, drugs, dyes, and colors	20,973,390	23,829,328	48,887,862
Apparel	19,583,588	27,015,153	40,729,760
Oils, fats, and resins, manufactured	4,448,896	13,226,639	18,615,796
Leather and manufactures thereof	5,278,640	7,146,098	11,672,599
Paper and cardboard	3,679,195	4,280,910	12,817,859
Vehicles (including locomotives, ships, and aircraft ..	24,508,382	13,980,593	60,165,590
Rubber manufactures	3,088,449	7,352,118	11,549,243
Miscellaneous articles mainly or wholly manufactured ..	26,005,593	38,559,628	49,070,253
Total	418,820,434	641,484,474	1,120,731,798
Animals, not for food	2,229,868	1,814,944	4,818,879
Parcel post	9,154,129	10,277,742	13,469,800
Grand total	525,253,595	798,638,362	1,335,569,027

SHARE OF THE DOMINIONS IN FOREIGN TRADE. The following analysis of the share of the dominions in the foreign trade of the Empire was made by the United States Bureau of Foreign and Domestic Commerce in 1920. In 1919 they supplied £582,570,639 worth out of total imports valued at £1,626,156,212, took £205,620,314 worth out of total British exports valued at £798,635,376, and received £9,641,698 worth of total re-exports from the United Kingdom valued at \$164,749,301, making the dominions' share £797,832,651 out of the year's total trade of £2,589,540,889. How these sums compare with correspond-

Great Britain's total trade in 1919 was 84.5 per cent greater than in 1913, the last complete normal year; but the trade with the dominions all but doubled during this period, the exact percentage of increase being 99.2, whereas that with foreign countries made a gain of 78.6 per cent as between the two years named. The dominions' share in the total foreign trade of the United Kingdom was 28.5 per cent in 1913 and 30.8 per cent in 1919.

The nature of the imports from British possessions into the United Kingdom may be gauged from the following table:

<i>Classification</i>	<i>1913</i>	<i>1918</i>	<i>1919</i>
Food, drink, and tobacco	£75,975,692	£166,460,470	£218,108,622
Raw materials and articles mainly manufactured	91,538,780	176,622,109	302,119,571
Articles wholly or mainly manufactured	28,845,019	76,952,466	59,118,000
Miscellaneous and unclassified	656,404	2,999,926	3,224,446
Total from British possessions	£191,515,895	£423,034,971	£582,570,639
Total from all countries	768,734,789	1,316,150,908	1,626,156,212

ing total in 1918 and the pre-war year 1913 appears below:

<i>Years</i>	<i>Foreign countries</i>	<i>British possessions</i>	<i>Total</i>
<i>1913</i>			
Imports	577,218,844	191,515,895	768,734,739
Exports	329,938,481	195,806,808	525,245,289
Re-exports ..	95,959,662	13,618,375	109,578,037
Total, 1913	1,003,116,987	400,488,078	1,403,555,065

As above figures show, imports from British possessions formed 24.9 per cent of the United Kingdom's total imports in 1913 and 35.8 per cent in 1919. In 1913 out of the aggregate British exports of £525,245,289 the value to British possessions amounted to £195,306,808; in 1918, £178,362,122 out of a total of £501,418,997; and in 1919, £205,620,314 out of an aggregate of £798,635,376. The value of the exports of food, drink, and tobacco to British possessions during the three years was:

<i>Food, drink and tobacco</i>	<i>1913</i>	<i>1918</i>	<i>1919</i>
Grain and flour	£241,494	£339,017	£932,237
Meat and animals for food	512,786	111,441	235,846
Other food and drink	9,894,208	4,793,339	7,945,270
Tobacco	1,508,043	2,699,170	2,080,328
Total to British possessions	£12,751,531	£7,942,967	£11,193,681
Total to all countries	£32,587,942	£12,016,823	£38,804,599

<i>Years</i>	<i>Foreign countries</i>	<i>British possessions</i>	<i>Total</i>
<i>1918</i>			
Imports	893,115,932	423,034,971	1,316,150,903
Exports	328,056,875	178,362,122	501,418,997
Re-exports ..	25,853,749	5,091,832	30,945,081
Total, 1918	1,242,026,556	606,488,425	1,848,514,981

<i>Years</i>	<i>Foreign countries</i>	<i>British possessions</i>	<i>Total</i>
<i>1919</i>			
Imports	1,043,585,573	582,570,639	1,626,156,212
Exports	593,015,062	205,620,314	798,635,376
Re-exports ..	155,107,603	9,641,698	164,749,301
Total, 1919	1,791,708,238	797,832,651	2,589,540,889

FINANCE. The budget for 1920-21 was as follows:

ESTIMATED REVENUE, 1920-1921	
Customs	£150,000,000
Excise	198,650,000
Total customs and excise	£348,650,000
Motor vehicle duties	4,500,000
Estate, etc., duties	45,000,000
Stamps	25,200,000
Land tax and house duty	2,500,000

Income tax (including super-tax)	385,800,000
Excess profits duty, etc.	220,000,000
Corporation profits tax	3,000,000
Land value duties	500,000
Total inland revenue	£682,000,000
Total receipts from taxes	£1,035,150,000
Postal service	37,000,000
Telegraph service	5,750,000
Telephone service	10,250,000
Total post office	£53,000,000
Crown lands	£2650,000
Receipts from sundry loans, etc.:	
Ordinary receipts	744,000
Special receipts	8,756,000
Miscellaneous:	
Ordinary receipts	18,000,000
Special receipts	302,000,000
Total receipts from non-tax revenue	£383,150,000
TOTAL REVENUE	£1,418,300,000
Borrowings to meet expenditure chargeable against capital	£10,366,000
ESTIMATED EXPENDITURE, 1920-1921	
<i>Consolidated fund services</i>	
National debt services:	
Inside the fixed debt charge	£24,500,000
Outside the fixed debt charge	320,500,000
	£345,000,000
Road improvement fund	£6,650,000
Payments to local taxation accounts, etc.	10,818,000
Land settlement	12,000,000
Other consolidated fund services	1,730,000
Total consolidated fund services	£376,198,000
<i>Supply services</i>	
Army	£125,000,000
Navy	84,372,000
Air force	21,057,000
Civil services	497,818,000
Customs and excise, and inland revenue departments	10,468,000
Post office services	49,689,000
Add, supplementary estimates to be presented	20,000,000
Total supply services	£807,904,000
TOTAL EXPENDITURE	£1,184,102,000
Balance available for debt reduction	234,198,000
TOTAL EXPENDITURE	£1,418,300,000
Expenditure chargeable against capital	10,366,000

The budget for 1920-21 increased the super-tax on incomes over £30,000; the duties on spirits and wines; stamp duties; postal duties; and duties on capital stock registration. In general, these increases were approved. There was also a new tax of 5 per cent on the profits of corporations, but restricted to limited liability companies. This was criticized as unfair in its application. The excess profits duty was raised from 40 to 60 per cent. This brought out strong objections from the business community. The budget provided for a surplus of £234,198,000 which was to be applied to the re-payment of the debt, but only £70,000,000 would be applicable to the re-payment of the floating debt. The measures provided for the re-payment of the floating debt were criticized as inadequate. When the budget reached its report stage there was a formidable attack upon it and a large number of the government's Unionist supporters voted against the increase of the excess profits duty, which was described as unfair and oppressive and as tending to keep up prices.

The following table shows the external debt

of Great Britain on March 31, 1920, and the countries in which the debt is repayable:

United States	£1,046,774,000
Canada	73,412,000
Japan	7,170,000
Argentina	19,200,000
Uruguay	5,954,000
Netherlands	743,000
Spain	2,500,000
Sweden	826,000
Fiji	434,000
Straits Settlements	7,656,000
Mauritius	532,000
Sundry allies	113,500,000
Total	£1,278,714,000

At normal exchange this would represent an aggregate of \$6,222,862,000. From the standpoint of leading London bankers the satisfactory aspect of these figures was that during the period March 31, 1919, to March 31, 1920, a net reduction of £86,136,000 had been effected, while after the latter date arrangements were made for further reductions amounting approximately to £80,000,000.

According to the Chancellor of the Exchequer the approximate national debt outstanding on Nov. 30, 1920, was:

Funded debt (2½ per cent consols, etc.) ..	£315,000,000
Terminable annuities	18,500,000
34 per cent war loan, 1925-1928	62,700,000
4½ per cent war loan, 1925-1945	12,800,000
5 per cent war loan, 1929-1947	1,949,300,000
4 per cent war loan, 1929-1942	67,200,000
4 per cent funding loan, 1960-90	407,000,000
4 per cent Victory bonds	857,700,000
Exchequer bonds, 1920, 1921, 1922, 1925, and 1930	315,000,000
4 and 5 per cent national war bonds ..	1,441,000,000
Treasury bonds, 5-15 year	13,850,000
Treasury bills	1,111,564,000
Ways and means advances	222,614,000
National savings certificates	277,900,000
Other debt	1,163,500,000
Total	7,735,628,000

The excess profits duties and the question of taxing wealth acquired in war time were the subjects of interminable discussions during the year and in the spring a select committee was appointed by Parliament to investigate the war time increases of wealth. It published its report in May. Its recommendations were not confined to the tax on war profiteers or to those who had grown wealthy on account of the war conditions as by the sale of goods at scarcity prices, etc. It made no distinction between those who had added to their wealth by saving or by enterprise, or by the receipt of legacies, saying that it was not practicable to determine whether or not the circumstances under which wealth was acquired were meritorious. The Board of Inland Revenue decided that the government and Parliament must assume the responsibility of deciding that £500,000,000 should be raised by the taxation of about 75,000 people which was the number of those who had in various ways been enriched by the war. As to a levy on capital which was proposed in certain quarters, the business community were determined to resist it by every means in their power. It was condemned on the ground that it did not distinguish between the different forms of acquired wealth or conform to the just principle that the people who had taken advantage of the nation's necessities should make a special contribution. The general opinion in the business world appeared to be that even the continuance of the excess

profits duty at 60 per cent was preferable to a levy on capital.

RAILWAYS. During 1920 the railways of the United Kingdom continued under the control of the State, exercised by the Ministry of Transport, Sir Eric Geddes, Minister, but this control according to the terms of the Ministry of Transport Act of 1919, was to cease on Aug. 15, 1921. There was, however, during the year no provision made for the financial returns which were guaranteed as equivalent to the net receipts of 1912. As a result there was comparatively little in the way of new construction or improvements carried on by railways whose future financial state was problematical and uncertain and whose future condition was likely to be influenced by national policies. During the year there were conferences between a committee of the Railway Companies Association and the Ministry of Transport, the latter agreeing to consult with the Railway Committee before introducing any new legislation. As matters developed during the year it seemed that any attempt by the government towards the nationalization of railways was no longer to be looked for, but a grouping of the railways in the future and their control in many ways were proposed. These and other questions were discussed and debated during the year, with the publication of various State papers bearing on the subject, but little positive action was taken bearing on the future. On Jan. 10, 1920, railway freight rates were increased, and again on September 1, resulting in a total increase of 112 per cent above those in force in 1914. Similarly passenger fares were raised another 25 per cent, or a total of 75 per cent above the 1914 scale, and season tickets on August 5 were raised to 50 per cent above the 1914 figures, while on September 1, workmen's fares for the first time were increased. An interesting event in British railway administration was the compilation of ton miles, engine hours, car loading, car miles, etc., in standardized form, begun on Jan. 4, 1920, and followed July 1, 1920, by passenger mileage statistics.

The financial conditions of operation were shown in a statement of the Ministry of Transport dealing with the financial results of the working of the railways during the six months ended Sept. 30, 1920. The total revenue earned was \$453,501,111. The total expenditure was \$415,866,636, leaving a balance of revenue earned over expenditure of \$37,634,475. The standard year proportion of net receipts under the given guarantee was \$88,581,500, to which was added for interest on capital works brought into use \$2,026,500. Thus the net government liability for the six months ended Sept. 30, 1920, was \$54,741,928. The traffic revenue earned was distributed roughly as follows: passenger traffic, \$223,982,885; freight traffic, \$247,562,711. For the month of September there was a net government surplus of \$799,697. This was the first surplus shown in any monthly return for the railways of Great Britain. The passenger receipts for September were \$38,923,500, or 17¼ per cent higher than those for the same month of 1919. Freight traffic for the month of September increased 124 per cent as compared with the receipts for the same month of the previous year. Tonnage had increased by about 14 per cent. The coal strike was estimated to have caused a loss in the revenue of the railways of approximately \$28,000,000.

The most important construction work of the year was on the London Northwestern and consisted of the Chalk Farm widening, a part of the Euston and Watford widening to provide for the new electrical service. This would give six running tracks under Primrose Hill, two of which were twin iron-lined tunnels 16 feet in diameter to be used for electric services, and were a part of the improvement which also involved some readjustment of trackage. The work, started in 1913, was interrupted in 1914 and ceased in 1917 entirely. It was resumed in October, 1919, and its completion was looked for in 1922. On Aug. 3, 1920, the Ealing and Shepherd's Bush line of the Great Western was completed, 4188 miles. This line was worked electrically by third rail system. On the Northeastern line the series of widening on the main line were reaching completion by the end of 1920, being rendered necessary by the increase of travel between England and Scotland. The new railway on the north side of the river Tees was finished and placed in use on June 21, connecting at the Billingham Beck end with a line from Haverton Hill to Billingham, the project forming another route between Stockton and Port Clarence, and giving increased facilities to the many industrial developments in this region along the north side of the Tees. The London and Southwestern had under way during the year important rebuilding and extensions of the Waterloo Terminus so as to handle the increased traffic caused by the electrical service. There was also in progress a new classification yard at Feltham covering 79 acres with a total of 27 miles of siding, 15 miles of which were being used in 1920. There was involved in this work not only grading and track-laying, but also bridge construction, stream diversion, pipe re-location, etc. The Great Eastern during the year improved its Liverpool-street western suburban service at a cost of some \$400,000 and engaged in a number of other improvements. In Scotland the North British Railway was engaged in a few improvements at Berwick, Dunferline Upper Station, and at Dumfries, where a new viaduct was being constructed.

The sole new railway project to be sanctioned during the year was the Derwent Valley, Culver and Haasop, to run from Grindelford on the Dore and Chindly section of the Midland, to Haasop on the Manchester and Derby section. Electrification of many lines was discussed during the year but without positive action. On the Northeastern the project to electrify the main line between York and Newcastle was postponed. The London and Southwestern also abandoned temporarily the extension of its electrical service to Guildhall. The London, Brighton and South Coast Company, however, stood ready to complete the main line to Brighton as soon as the outlook was favorable. On September 29 a departmental committee of the Ministry of Transport, appointed in March to consider and report on electrification of British railways, presented an interim report after a series of meetings.

MERCHANT SHIPPING. Statistics published by Lloyd's register in the latter part of the year showed that Great Britain was well ahead of the United States in the building of merchant vessels. During the war the United States had easily taken the lead. Before 1914 Great Britain held the first place, but the necessity of war absorbed a large part of her building capacity and

drew into the service many of the merchant ships. After the armistice the British shipyards were employed again in the building of merchant vessels but they could not be devoted exclusively to that work for a number of months as it was necessary to complete the various war vessels that had been begun and to refit those merchant ships which had been used as war-vessels. After that the industry proceeded rapidly and at the beginning of 1920 the output of British ship yards already exceeded that of the American yards and by June, 1920, the figures were as follows: United States, 2,105,965 tons, or a decrease on the part of the United States of about 2,000,000 tons as compared to Great Britain, 3,578,153 tons, or an increase during the year of 1,323,000. In October the orders were still flowing in to the British ship yards, many of which had been enlarged while in the United States several of the navy yards created during the war had been closed on account of the cessation of orders from the government. Still British merchant shipping had not even then made up all of its losses in spite of the addition of the German ships and its tonnage was 781,000 less than in 1914. The percentage of the world's tonnage possessed by Great Britain was 54.4 and in 1920 it was 49.6. The merchant fleet of the United States had increased with great rapidity during the war and even after the diminution above mentioned it counted 2,000,000 tons more than six years before or an increase of 600 per cent. The number of vessels in the world in 1920 was given as follows: steamships, 26,513; sailing vessels, 5082; total 31,595; with a total tonnage of 57,314,065 of which the United States possessed 43 per cent. The above figures show a decrease in sailing vessels from 22 per cent in 1902 to 6 per cent in 1920. Great Britain was thus in a good position for the approaching competition with America and the shipping authorities in England had no fear that the United States would outstrip them. The great English companies were showing much enterprise in regard to passenger traffic. They were refitting several of the great transatlantic liners and providing for the consumption of oil instead of coal and they promised to offer travelers a prompt and comfortable service.

The nationality and net tonnage of vessels with cargoes entering and clearing from British ports in 1913, 1919, and 1920, were as follows:

Nationality	1913	Enter. d	1920	1913	Cleared	1920
	Tons	1919	Tons	Tons	1919	Tons
British	32,292,348	22,079,612	25,530,845	40,101,232	21,962,895	23,408,613
Russian*	677,861	186,944	121,972	937,224	190,253	94,827
Swedish	1,891,207	1,018,334	1,288,059	8,015,650	1,582,684	1,117,683
Norwegian	3,284,789	1,436,265	1,881,794	4,683,138	2,054,314	2,918,682
Danish	1,160,728	479,270	731,678	2,613,198	1,458,194	1,255,369
German	3,166,353	8,351	198,860	5,729,543	2,653	251,634
Dutch	1,702,192	950,863	1,282,819	2,535,552	1,523,349	1,434,396
Belgian	1,369,298	889,345	709,643	856,582	611,935	826,867
French	999,228	412,148	937,741	1,974,820	2,099,908	2,027,139
Spanish	1,059,948	322,415	401,893	1,694,089	438,020	439,088
Italian	122,228	91,172	174,003	954,800	287,308	488,315
Austro-Hungarian	128,353	.....	.....	714,885	.....	.....
Greek	220,875	85,922	174,024	1,071,583	260,214	810,063
United States	724,473	1,625,498	2,357,577	370,258	609,020	1,241,727
Japanese	139,623	339,710	441,450	281,705	240,265	416,946
Other nationalities	124,734	144,841	385,880	185,442	241,095	358,057
Total	49,064,233	29,570,690	36,518,236	67,819,701	34,562,107	36,589,406
Total foreign	16,771,890	7,491,078	10,987,391	27,718,469	12,599,212	18,180,793

* From Jan. 1, 1920, Finnish vessels have been included under "Other nationalities."

It will be observed that in vessels entered and cleared, American tonnage was more than three times as large in 1920 as in 1913, and that the

tonnage thereof cleared with cargoes in 1919 and 1920 was considerably over 1,000,000 tons less than the total so entered. British clearances in 1920 were more than 2,000,000 less than the entrances.

ARMY. There was much comment in the press toward the close of the year on the large number of troops still in service and it was pointed out that the military forces of the empire were double the strength of pre-war times. This was attributed to the large number of troops required in Ireland, Egypt, India, and elsewhere. The number of troops in Ireland was placed in November at 75,000; in Egypt, 60,000; in Palestine, 44,000; in Mesopotamia and Persia, 120,000; in the Black Sea area, 20,000; while the Indian army was placed at more than 200,000.

On December 31, the strength of the effectives was: White troops, 295,000; territorials, 233,000; native and colonial, 130,000. See NAVAL PROGRESS; and MILITARY PROGRESS.

MINISTRY. At the close of the year the cabinet was constituted as follows: Prime Minister and First Lord of the Treasury, D. Lloyd George; Lord President of the Council, A. J. Balfour; The Chancellor of the Exchequer, Austen Chamberlain; Without Portfolio, Sir L. Worthington Evans; Lord Privy Seal, A. Bonar Law; Lord Chancellor, Lord Birkenhead; Secretaries of State: Home Affairs, Edward Shortt, K.C.; Foreign Affairs, Earl Curzon; Colonies, Viscount Milner; War, W. S. Churchill; India, H. E. S. Montagu; First Lord of the Admiralty, Walter Long; Minister of Health, Dr. C. Addison; President of the Board of Trade, Sir R. S. Horne; Minister of Labor, Dr. T. J. Macnamara; Air Minister, W. S. Churchill; Minister of Agriculture, Lord Lee of Fareham; President of the Board of Education, H. A. L. Fisher; Transport, Sir Eric Geddes; Secretary for Scotland, R. Monro, K. C.; Lord Lieutenant, Viscount French, and Chief Secretary for Ireland, Sir Hamar Greenwood.

HISTORY

THE IRISH QUESTION; HOME RULE BILL. The Home Rule bill of Government of Ireland act, was introduced, February 25. Its main provisions had been proposed by Lloyd George in 1919 and were noted in the preceding YEAR BOOK, but they may be briefly summarized here as follows: Two parliaments, each with a single chamber—one for Northern Ireland and one for Southern Ire-

Nationality	1913	Enter. d	1920	1913	Cleared	1920
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* From Jan. 1, 1920, Finnish vessels have been included under "Other nationalities."

land; a council of Ireland to serve as the instrument of adjustment between the two and to consist of 20 members of each parliament under the

king as president; the two parliaments to have the right to substitute for this council a parliament for the whole of Ireland, whose constitution was to be determined by the provincial parliaments; jurisdiction on the part of the provincial parliaments over all matters except the succession to the throne; peace, war, military affairs, naval affairs; treaties, extradition, etc.; treason, naturalization, etc.; external trade; cable, wireless, light-houses, aviation, coinage, etc.; and in addition certain things reserved specifically; executive power vested in the lord lieutenant; the provincial ministers to be privy councillors and not to hold office longer than six months, unless a member of the provincial House of Commons and has tenure of office subject to the pleasure of the lord lieutenant if he does not head a department; constabulary and metropolitan police to be retained till transferred to the provincial parliaments, but this must be done within three years; parliaments to hold annual sessions; the southern house to have 128 members, the northern, 52, and elections to be by proportional representation; the provincial parliaments not to pass money bills unless recommended by the lord lieutenant; representation of the Irish in the imperial parliament to consist of 42 members until otherwise determined by parliament; parliaments empowered to impose taxes other than customs duties, excise, excess profits duties, and the income tax of the United Kingdom; repeal of the government of Ireland act of 1914.

The second reading was reached on March 31, when it passed by a vote of 348 to 94. Among the leaders in the opposition to it were representatives of the British Labor party and of the Irish Nationalists, Lord Robert Cecil, a Coalition Unionist, and Mr. Asquith, former Liberal premier. It was criticized from various points of view, among others that it cut Ireland in two and placed it under a cumbersome and costly double government. This objection was advanced by Mr. Asquith, who favored the placing of Ireland on the footing of a dominion. The government objected that this came to the same thing as making it a republic. Mr. Asquith's amendment to establish a single parliament was defeated, May 10, by a vote of 259 to 55. Throughout the months of May and June discussion was at intervals resumed, but the opposition took little interest and the chief part was taken by the Unionist members. Its critics declared that it was the government's policy to take advantage of the present temper of Parliament to force through a measure obnoxious to the Irish majority. On the second reading of the bill its rejection was moved by Mr. Clynes, who was supported by Mr. Asquith. On November 12 it passed its third reading in the House of Commons and was then sent to the House of Lords. It finally received the royal assent late in December. After all the discussion and criticism it still contained practically the same features that had been implied in the outline by Lloyd George a year before.

THE IRISH QUESTION: REVOLT AND REPRESSION. On January 15 the municipal elections showed large gains for the candidates who favored an independent Irish republic. This was followed by greater boldness on the part of the Sinn Fein agitators, who at the end of January displayed the flag of the Irish republic on the tower of the municipal building next door to

Dublin Castle. The Sinn Feiners from the beginning were convinced that they had the majority of the Irish people behind them and they steadily denounced the government's Home Rule bill and opposed all government attempts at settlement. The city of Dublin chose for mayor the Irish agitator, Tom Kelly, who had passed two years in prison, and in many Irish cities Sinn Fein chairmen were elected. In the contest over Ireland, the English Labor party showed on many occasions its sympathy with the Irish demand for an independent republic, though it declared itself opposed to the complete separation of Ireland from the empire. Government troops arrested all the Sinn Fein officials, January 31, at Dublin and several other cities, who had been accused of acts of rebellion, and sent them to England on British warships. On March 20th occurred the murder of the mayor of Cork, Thomas MacCurtain, which was attributed by the Sinn Feiners to British agents. Certain British newspapers however said that the Sinn Feiners had committed the murder because MacCurtain had denounced their crimes. The coroner's jury declared that he had been murdered by the Irish Royal Constabulary and laid the guilt at the door of Lloyd George, Lord French, and other officials. His successor was Terence MacSwiney (q.v.). The repressive policy of the British government continued under Sir Hamar Greenwood, who succeeded to the office of Chief Secretary for Ireland April 2d. In April attacks were made on the police barracks and on government officers. Records and other papers were burned in the offices of government inspectors, tax collectors, and surveyors. It was reported that more than 200 police barracks were destroyed. The driving away of cattle was another feature of the disturbances. A hunger strike on the part of about 100 prisoners at Mountjoy began April 4th. On April 13th the Irish Trades Union Congress called a general strike, but on the following day the government released the hunger strikers and the general strike ceased. Many police barracks were burned May 12th-13th when some 50 of them were attacked by armed Sinn Feiners. Thereupon the government began to pour in more troops, estimated at the number of 80,000, and at the same time a large number of discharged English and Scottish soldiers were added to the Royal Irish Constabulary. Radical members of the Irish Labor party retaliated by refusing to unload the munitions as they arrived at Dublin. There was a strike of railway men May 24th which checked all traffic, and the workmen in the power stations quit work at the same time thus putting an end to the unloading of munitions from vessels. New municipal elections, June 4, showed great Sinn Fein gains in Munster, Connaught, Leinster, and even in parts of Ulster, where they elected their candidates on the county councils. There were further raids upon the police barracks in June, and on June 13th a boycott of the Irish Royal Constabulary was begun, which resulted in delaying the sending of food and other supplies to the policemen and their families. It was announced by the government on June 15th that it would pass the Home Rule bill at an early date and that if the Parliament of the South should not be organized, the Lord Lieutenant and a committee of the Privy Council would assume its powers. On June 19th riots occurred between the Unionists and the Sinn Feiners in Derry, giving the city over to mob rule for several days.

In August fighting took place in the Belfast shipyards. Early in that same month the government carried through the Restoration of Order in Ireland bill, giving extraordinary power to the Irish authorities. The Royal Irish constabulary was recruited by the creation of an Auxiliary Division consisting of English ex-service men. At the end of August there was rioting on a large scale in Belfast, which resulted in depriving many citizens of their homes.

THE IRISH QUESTION: MURDERS AND PILLAGE. The "Black and Tans" (English recruits to the Irish Constabulary) sacked the town of Balbriggan in September and other cases of government violence were alleged in Trim, Mallow, and elsewhere. Although the government through its representative in Ireland, Sir Hamar Greenwood, declared that it could not countenance reprisals, such acts continued to be frequently reported. There was a general demand in quarters opposed to the government that an impartial inquiry into reprisals should be made, but after the re-assembling of Parliament, October 19, this was refused by the government. Meanwhile the breaches of peace continued. There was an encounter between the troops and the Sinn Feiners near Enniskerry, North Wicklow, September 17; fighting at Cork and Belfast, September 20; the murder of a Sinn Fein Limerick official, September 22; and, October 9-10, the Cork post office was damaged by bombs and British officials near the city ambushed and one of them killed.

Hardly a week passed without the report of a number of incidents similar to the above or worse. One of the most serious occurred in Dublin, Sunday, November 21. The police by that time were meeting with more success, their round-up of the Sinn Feiners having collected a great mass of evidence and secured the arrest of many important prisoners. In retaliation a series of murders were committed in the forenoon of November 21st in a systematic manner, which evidently proved a thorough organization for the purpose. The murderers, who passed through the streets by one's or two's in order not to attract attention, gathered in groups of 10 or more at the houses where officers and civilians connected with the court-martial proceedings against the Sinn Feiners, were living. They entered hotels and private houses and finding their way to the men's rooms killed 14 of them and wounded others. The police retaliated in the afternoon at a hockey match in Croke Park where some 3000 spectators were gathered, among whom they suspected some of the criminals were to be found. On the approach of the police some of the Sinn Fein pickets fired at them. This brought a return fire in which 10 men were killed and many others wounded. At least two of the crowd were trampled to death in the panic. The government's account of the affair in Parliament on November 22d, led to a stormy discussion which came near degenerating into a scuffle. On November 30th, a detachment of the Auxiliary Division was ambushed and 17 were killed.

As to the murder of British authorities in Ireland, they were defended by Sinn Fein leaders on the ground that they were justifiable reprisals of a defenseless people against their brutal oppressors. Dr. de Valera who had assumed the title of President of the Irish Republic declared that there was no comparison between the guilt of the British soldiers who shot down the civilians and the Irishmen who killed those soldiers.

The soldiers in Ireland were making a barbarous war on people who were not guilty of any oppression of England, and if the British would withdraw their forces in Ireland, every individual in those forces would be unmolested. Many charges of murder and even of massacre on the part of the British troops of Ireland were made by their opponents.

THE IRISH QUESTION: HUNGER STRIKES. In addition to the strike of the Mountjoy prisoners above mentioned, there were several sensational cases of hunger striking among the prisoners arrested for seditious activity in connection with the Sinn Fein movement. The most conspicuous of these was the case of Terence MacSwiney, Lord Mayor of Cork, who died after a hunger strike of 74 days on October 25th. (See MACSWINEY, *TERENCE*.) On the same day, October 25, Joseph Murphy, another hunger striker, died in Cork jail. He had been one of 11 men imprisoned two days before MacSwiney was sent to Brixton prison and his hunger strike lasted 76 days. All these 11 prisoners went immediately on a hunger strike and one of them, Michael Fitzgerald, had died the week before Murphy's death.

THE IRISH QUESTION: THE SITUATION IN THE AUTUMN. On September 29th, Viscount Grey proposed the settlement of the Irish question by placing the country on a dominion basis, leaving to the central government only the control of the departments of foreign, military, and naval affairs. This was rejected both by the Sinn Fein leader, de Valera, and the Unionist leader, Sir Edward Carson. The former contended that Ireland had the right to control her own destinies. On October 9th, the Prime Minister rejected the plan for dominion rule and declared that the government would continue its policy of stern suppression until the campaign of crime had come to an end. Mr. Asquith went further than Lord Grey and did not require even the reserve to the British of foreign affairs and the army and navy; while Mr. Henderson of the Labor party demanded that Ireland should be entirely free to determine her own destination. Lloyd George defined the policy of the government in a speech at Carnarvon, the leaders in the Irish movement having by that time definitely rejected any proposal other than that for granting complete independence. He said that the government believed in a strong policy and that it was necessary to finish with what he called a band of assassins. He said that he would not permit Ireland to fall into complete anarchy, and that it was the duty of every statesman to suppress the violence of a minority. Whatever the cause might be, such methods could not be admitted into a well organized state and they could only damage the purpose their authors had at heart. By resorting to civil war, the Sinn Feiners had plainly condemned themselves. The first consequence of setting up dominion home rule in Ireland he said might be the establishment of forced military service in Ireland, and England would then have to adopt the same measure, as she could not have in her neighborhood an independent army of 500,000 men, while she herself possessed only 100,000. Ireland all during the war had been a source of alarm to England. The Irish had fired on British soldiers in Dublin in 1916; they had conspired with leaders of German submarines in 1917 and 1918; and two months after the last German offensive they were ready to raise an army in Ireland in order to attack

England in the rear. He declared that these facts could not be contested. If things came to such a pass that England had always to fear Ireland as an enemy when she had to defend her own power in the world it proved that some equitable settlement must be found. While he would not consent to a Home Rule plan, which would permit Ireland to dispose of an independent army and navy, he was ready to bestow on the island an independent government and to permit the Irish to administer their own affairs as they chose. In other words Lloyd George on this occasion simply repeated the proposals that had frequently been discussed before and had been absolutely rejected not only by the Sinn Feiners, but even by the Nationalists. Many other suggestions had been made for the compromise of the issues between the two parties; but the leaders of the Irish movement would not accept them. It appeared that the Sinn Feiners had preferred civil war to any relaxation of their demands. Outside of England, although the opinion was generally favorable to the Irish the attitude of the latter toward the question of Ulster weakened the general sympathy. On the one hand the British government seemed disposed to make all concessions compatible with its imperial interests and on the other was the Irish organization which showed completely irreconcilable spirit. As affairs stood in November, it appeared that the British government would never grant complete independence to Ireland unless it was forced to do so, while Ireland showed no disposition to yield on any point. The persistency of the Sinn Feiners seemed to lead to no other result than a civil war in which their cause must be lost. Meanwhile the condition was that of private war carried on by means of assassination. Nevertheless in the United States general sympathy as judged by the press was on the side of the Sinn Fein.

THE IRISH QUESTION AT THE YEAR'S CLOSE. It was announced by the government on December 10th that martial law was to be proclaimed in four Irish counties. Many business houses were destroyed in the centre of Cork, December 12, in the course of a fire started by incendiaries, and other serious damage resulted. Toward the end of the year the government published a list of outrages committed by the revolutionists, December 18 to January 1, as follows: Destruction of 69 courthouses and 532 barracks belonging to the Royal Irish Constabulary; 31 raids on the mails; and the damaging of 73 other barracks belonging to the constabulary. The Crown forces were reported at the same time to have suffered the following losses: Military, 54 killed and 116 wounded; police, 176 killed and 351 wounded. Meanwhile a Labor commission had been created to investigate the methods of administration. It published its report December 28th. This condemned the government's method and brought grave charges against the government forces. A meeting of the Labor members of Parliament was held in London, December 29, which unanimously adopted a resolution defying the government to disprove these findings of the committee. It defended the right of Ireland to dispose of her own destinies and attacked the repressive policy of the government. The plan approved at the meeting for the settlement of the question, included first, the withdrawal of all the armed forces; second, the placing of the responsibility for the maintenance of order in each local-

ity in the hands of the local authorities; third, preparations for the immediate election by proportional representation of a constituent assembly for the framing of a constitution acceptable to the Irish people.

THE GOVERNMENT AND THE COAL INDUSTRY. The system of state control established during the war was continued with certain changes afterwards and this status lasted during 1920. In general the government regulated prices and guaranteed a certain standard of profits to the mine-owner by a charge on the more profitable mines, the surplus if there were any after the profit had been paid, to be retained by the government. As a basis for determining the standard of profits the government allowed the mine-owners to choose the best four out of six or the best two out of three years before the war, or in place of that to accept a profit of 9 per cent. It was said that this guaranteed a profit of £22,000,000 to the mine-owners which was £9,000,000 in excess of the average profits before the war, and the mine-owners paid the excess profits' duty only on profits above that figure. In addition to this the sum of £4,000,000 was guaranteed to the owners as interest upon the new capital applied to the industry. Thus, £26,000,000 were free from the excess profits' duty. Furthermore they were to have one-tenth of any surplus profits above that limit and the profits accruing from coke ovens and by-product plants were not under the Coal Controller. These amounted to between £6,000,000 and £11,000,000. On behalf of the miners it was argued that this was absurdly favorable to the owners. It would have been reasonable in fixing the profit standard, to base it on the average profits during the war, which was, exclusive of royalties, about £13,000,000 a year, royalties being placed roughly at £6,000,000. The present arrangement, it was claimed, guaranteed the owners more than twice their pre-war profits, while they permitted them actually to receive nearly three times as much as they had received before the war. When the legislation on the subject came before Parliament early in the year, the miners attacked this arrangement. In the autumn the question arose over the surplus which the government received after admitting these profits to the owners. This surplus was extremely large on account of the sale of coal abroad at famine prices in response to the enormous demands of the Continent. The figure was placed by the trade unions at about £60,000,000 but the government rated it much lower. Such a surplus was described as a reward for taking advantage of the wretched peoples on the Continent and the arguments against it appealed to justice and to the spirit of national comity. On the other hand the government embarrassed in its need for revenue wished to retain this source of profits. In the debate on the subject, the government maintained that the entire surplus should be employed for the relief of taxation. The miners argued that this was in effect an indirect taxation upon the users of domestic coal.

In August they presented the following demands: (1) Reduction in the price of domestic coal by 14 shillings, 2 pence—this amount being that which the Coal Controller had added in May; (2) Advance in wages of 2 shillings a shift on the ground that they had not kept up with the cost of living. The government refused on the ground that the home consumer was getting coal

at cost and declared that it could not consent to an increase in wages unless the miners guaranteed the output. It said the profit on export coal ought to go to the exchequer. It proposed an advance proportionate to the total output, namely, an increase of 1 shilling when the output was 240,000,000 tons, 1 shilling, 6 pence when it was 244,000,000 tons and 3 shillings when it was 256,000,000 tons. The miners dropped the first of these demands rather than go on strike. The government's principles of making the wages proportionate to the output appealed to the general public as a reasonable means of insuring an adequate supply at a fair price. Friends of the miners argued, however, that when seen from the point of view of the individual workman it was not reasonable for it was not to be supposed that an individual miner's wages should be dependent for their increase on the increased output in the whole industry throughout the whole country. This would not affect the individual's willingness to put more energy into his work, for the reward was too uncertain and depended on too many elements with which he had nothing to do. It violated the principle that individual earnings should correspond to individual efforts. Then it was asked what the relation of wages to profits would be in such a scheme. Sliding scales worked successfully in certain cases where there was an exact relation between profits and the output, but there was no such relation in the present case. In fact in certain cases it had been profitable to the owners to restrict the output. The main point urged against the government's proposal, however, was that it was unreasonable to suppose that an increased output could be secured mainly by increased efforts on the part of the miners. The output was limited by other factors than the labor of the miners. During the four years of war the equipment deteriorated, because suitable machinery and supplies of various kinds could not be got, and these conditions continued afterwards owing to the reluctance of investors to invest in an industry that might be nationalized. Technical deficiencies therefore hampered production aside from the defects of private ownership. These latter defects had been previously pointed out many times by the miners in their argument for nationalism and they included such things as the drowning out of coal on account of the inability or unwillingness of owners to combine for drainage schemes, and the losses owing to the great waste in distribution. Restrictions of output, owing to technical deficiencies had reacted upon the miners and they had frequently lost their impulse to do their utmost. When a mine restricted its output on account of defective transport one week, it was natural that the miners should not bestir themselves to increase it the next week. They had no power thus to remove these technical obstacles and they were indignant that they should be held to account for them, especially as they had repeatedly urged that the government should take measures for the removal of these obstacles. It was asked why the government if it really desired to increase the output did not insist at once on the proper equipment and organization of the industry. It was charged that their only reason for not doing so was their fear of offending the mine-owners. Evidence on the subject of these deficiencies had been given by the former director of collieries, Sir Richard Redmayne, before the Coal Commission and con-

ditions had not been changed since. When the Federation of Mine-Workers demanded a reduction of 14 shillings and 2 pence in the price of domestic coal, a great wave of indignation swept over the government and its press. Friends of the miners asked why it was that a Prime Minister posing as the protector of the poor who would naturally have repudiated a proposal to increase prices should make such an outcry over a proposal to lower them.

The watchword of the government was "*decontrol*," that is to say, a return to normal conditions. The wages of the miners had been partially standardized owing to war conditions. This had involved charges on the plants which made more than the standard profits for the benefit of those which made less. It was argued that in the interest of the consumer as well as the mine-workers this unification should go further instead of ceasing altogether, for the cost of production varied greatly from coal pit to coal pit and the prices must be high enough to cover the cost at the less profitable mines. Such prices yielded an enormous profit to the better placed collieries and the divergence was plainly brought out by the Coal Commission. The owners of the more profitable mines naturally were eager to return to pre-war conditions and therefore favored the introduction of "*decontrol*," at once. The miners' policy of lowering prices was seen to endanger this prospect, for the policy of "*decontrol*" involved an increase of prices until the poorer pits could be made to pay. In short, the miners wished the industry to be treated as a single service and in making this demand they were accused of aiming directly at nationalization. The owners on the other hand wanted to abolish such small measure of unification as was already introduced. In May, the government raised the price of household coal to 14 shillings, 2 pence. They declared that they would not immediately abolish control but their opponents believed that they were pledged to the owners to abolish it at an early date. Previous to 1920 there had been strong expert support of the plan for unification. This had been recommended by the Sankey report and by the majority of the Coal Commission and it had been also recommended by the Coal Controller's office in 1920. As the situation presented itself in the autumn of 1920 it was merely a struggle of interests and appeared not to be working out in accordance with any definite economic plan aiming at the good of the country as a whole. The above account is based on the arguments of Mr. R. H. Tawney, a supporter of the miners. On the other hand it was pointed out that Mr. Robert Smillie in his speech at Wrexham, August 24, had said, "We are determined that the nation shall own the mines, and the time will come when the present exploiters will have to give them up." The following figures for wages and output were presented comparing conditions in 1913 and 1920:

	Number of workers	
1913	1,110,000	
1920	1,206,000	
Increase	96,000	
	Output	
1913	287,500,000 tons	
1920 (estimated)	240,500,000 "	
Decrease	47,000,000 tons	

The result of the miners' ballot upon the ques-

tion of a strike to enforce their demands for higher wages and a reduction in the price of coal to the home consumer was announced, August 31, as follows:

For a strike	608,782
Against a strike	238,865
Majority for strike	367,917
Total votes recorded	845,647
Percentage majority for strike	71.75

After various conferences during the week ending September 10, the government set forth its position as follows:

"Public indifference to the demands of the miners is due to a consciousness of the absolute fairness of the attitude taken by the government in this matter. Mr. Smillie in a speech at Wrexham indicated that the present demands were put forward as a step towards the nationalization of the coal industry. We do not propose to get rid of the control of prices, because we recognize the necessity of keeping a sufficient supply of coal in this country to satisfy our own needs at a price which is fair to the individual consumer. With regard to the wages claim, the concession of the miners' demand would involve an immediate increase in the price of coal. So far as the government is concerned no point of dignity will prevent us trying to achieve a settlement. In so far as the miners' claim is a wage claim, and not a question of policy, the Industrial Court is the body to decide it. So far as any claim is a wage claim the government would welcome a decision by some impartial body."

The attempts to avert the strike of the coal miners by means of a conference, October 1, on the part of Lloyd George and representatives of the miners and owners, respectively, failed of effect and on October 14th, after a new ballot, the Miners' Federation by a vote of 635,098 against 181,428 decided, contrary to the advice of several leaders including Mr. Smillie, to reject the offer of the owners. The latter included an advance of two shillings a shift in wages, provided the coal output was brought to 248,000,000 tons a year. On October 16th, 1,000,000 strikers went on strike. Their action was condemned generally by the press. As to the government, the Prime Minister declared that it had done its best to prevent this calamity, and that it was resolved now to oppose the miners in their attempt to obtain by force their unreasonable demands. The effect on the public was indicated by the following summary by the *London Times* of the resulting measures and conditions:

COAL

Supplies limited to:

One hundredweight a week for each household. (None at all if there is 10 hundredweight in stock.)

Half average weekly supply for works and factories.

GAS AND ELECTRICITY

Gasworks ordered to limit pressure of gas supplied to houses.

Gas or electricity used as power in works or factories reduced to half average weekly supply.

Shop window lighting restricted and illuminated signs prohibited.

FOOD

Nobody to possess more than one week's supply of any commodity.

Sugar ration reduced from 12 ounces to 8 ounces a week.

TRAVEL

Reduction in long-distance railway facilities and in steamship services.

SPORT

All horse racing suspended, except in Ireland. The strike lasted till the beginning of November when a vote on its continuance though giving a majority in favor failed of the requisite two-thirds. The principal points in the settlement submitted to the miners for vote after agreement with the government were as follows:

1. Joint district and national committees on output.

2. A joint scheme to be submitted to the government for the future regulation of wages.

3. Advances of wages by 2 shillings a shift for men, 1 shilling for youths, and 9 pence for boys immediately upon resumption of work.

4. Adjustment of wages from Jan. 3, 1921, and thereafter every four weeks, on the basis of export coal values.

(a) The September (1920) quarter's export coal values are taken as a standard, warranting advances of 1 shilling 6 pence, and 4½ pence a shift on present earnings.

(b) Every increase in the proceeds of export coal by £288,000 a week over the weekly average of the September quarter (after deducting 15 shillings a ton as the cost of extra output) will entitle the workers to an additional 6 pence, 3 pence, or 2½ pence a shift.

(c) All coal raised in excess of a tonnage at the rate of 219,000,000 a year will be assumed to be export coal.

(d) There will be a variation of the owners' one-tenth share of surplus profits, as provided for in the coal mines (emergency) act, proportionately with the rise or fall of wages.

Work was resumed during the first week of November.

PARLIAMENT. Parliament met February 10th. The speech from the throne indicated a programme so long as to be impossible of execution. It included the introduction of bills dealing with Home Rule, the coal industry, peace time regulation of the drink traffic, food stuffs, creation of an adequate supply of cheap electrical and water power, army organization, unemployment insurance, minimum wage, regulation of working hours, agricultural development, the fishing industry, anti-"dumping" and reform of the House of Lords. In addition to this, the Prime Minister declared the necessity of suitable housing measures. There had been serious delays in carrying out the promise previously made by the government in respect to housing legislation, but for this the Prime Minister laid the blame on the Labor element, especially the trade unions. The government came in for some sharp criticism on the part of its enemies. The Labor party attacked it for its Irish policy and its failure to nationalize the coal mines, while the Liberal party criticized it for failing to emphasize the need of national and individual economy. Amendments calling for the nationalization of the mines and expressing regret that the inability of the former enemies to execute the peace terms had not been recognized were lost by a large majority, as was another amendment criticizing the government's financial policy. The main interest during the six months preceding the vacations was centred in the Home Rule bill and the

budget. At the time of its adjournment in the summer few of the above measures had even been introduced. The coal industry and unemployment insurance bills were the only important ones passed. The Home Rule bill was still in the committee stage; and the Agriculture bill had not reached the report stage. The questions of regulating the drink traffic and providing cheap electric and water power supplies had been dropped. Parliament adjourned to October 19th. It then remained in session till December 23d. Chief among the measures passed was the bill providing for the future control of the coal industry. This bill which had been drafted in the spring provided for the return of the mines to private ownership. The ministry had from the first been opposed to nationalization of and even to the compromise measure proposed by Lloyd George in August, 1919, for a union of mines in certain areas directed by committees in which the workmen would be represented, under state supervision. The main features of the bill were the establishment of a separate department of mines charged with insuring safety and obtaining information for the benefit of the workmen and with its setting up of new machinery for the adjustment of disputes. Another important measure carried was the Agriculture bill which aimed to give the farmer security by guaranteeing prices for wheat and oats, and at the same time to give the laborer security through a permanent agricultural wages board whereby a minimum wage would be guaranteed. The measure also aimed to secure the farmer's tenure and to this end largely increase the sum which he was entitled to recover if disturbed. It sought to bring the guaranteed prices into direct relation with the cost of production. In the matter of tenure it provided that notices to quit if their justice was questioned by the tenant should be arbitrated. Other measures included the Dyestuffs bill which aimed to strengthen the dye industry by prohibiting importation; the War Emergency Laws bill; the Official Secrets bill; and the Unemployment Insurance bill, whose provisions are noted below. Important debates aside from finance and the Irish question which overshadowed all others, were the discussion on the coal strike in October which showed a spirit of great moderation; the debate on the retirement of General Dyer for his summary measures in dealing with the Amritsar riots in the preceding year; the debate on the government's course in Mesopotamia; on the Austrian treaty; on the resumption of trade relations with Russia, and other matters of foreign policy.

EMERGENCY POWERS. The Emergency measure above mentioned received the royal assent on October 29th, having been rushed through Parliament with little debate. It empowered the government to proclaim "a state of emergency" when there was in its judgment danger of interference with the supply and distribution of food, water, fuel, or light, or with the means of transport. Orders in Council might in such case be issued to secure the "essentials of life" to the community—such regulations, however, not to continue without the sanction of both Houses of Parliament. The immediate occasion of its passage was the threat of the railwaymen in October to enforce a "lightning" strike.

CHANGES IN THE MINISTRY. Early in the year the ministry ceased to contain any representatives of Labor. At the end of January, Mr. G. N.

Barnes, minister without portfolio, withdrew and on February 6th, and March 10th respectively the last Labor representatives in the ministry, namely, Mr. George H. Roberts, Food Controller, and Mr. G. J. Wardle, parliamentary secretary to the Ministry of Labor, resigned. On March 1, Sir Robert S. Horne succeeded, as president of the Board of Trade, Sir Auckland Geddes, who was appointed British Ambassador to the United States, and he was succeeded as Minister of Labor by Dr. T. J. Macnamara. Another important appointment early in the year was that of Sir Hamar Greenwood, as chief secretary for Ireland in place of J. I. Macpherson, who became Minister of Pensions in succession to Sir L. Worthington Evans. The last named became minister without portfolio, in succession to Mr. Barnes. Corresponding changes followed among the under-secretaries. The Ministry of Transport, which had been established during the war and abolished in 1920, was restored for a short time but on September 28 was definitely abolished. Though its work and organization had been highly praised by many and the administration of Sir Eric Geddes had been widely approved, it was criticized by others on the ground of unnecessary expense. For members of the cabinet at the close of the year, see above under MINISTRY.

POLITICAL PARTIES. Early in the year an important by-election was held at Spen Valley, the most significant that had been held since the general election, for it was regarded beforehand by the government as a test of the strength of the Liberal following upon which the government could count. There were two Liberal candidates in the field, one representing the Coalition and the other an Independent Liberal. Both were heavily defeated and the Coalition Liberal ran nearly 4000 votes behind the Labor candidate. It was the culmination of a long series of Labor successes indicating a great growth of strength. The weakness of the Labor party was at that time its lack of leaders in Parliament. Prominent men in the Liberal party declared after the Spen Valley election that the Independent Liberals had no hope of success. Some of them favored a progressive policy that would bring the Liberals into line with the Labor party. Others, however, objected to this on the ground that no compromise was possible and advised the free Liberals to unite with the Coalition on the basis of a restoration of cabinet government and the appointment of Liberals to the ministry. In January Mr. Asquith decided to stand as the Liberal candidate for Paisley. In the course of his speeches, he laid down a programme including the taxation of wealth accumulated during the war and the duty of the Liberals to reinforce the power of the League of Nations so that it might secure at once progressive disarmament. He believed in a revision of the territorial arrangements made by the treaties and urged the summoning of an international economic conference of all states affected by the war, including the enemy nations. As to the Irish question, he believed in the immediate granting of self-government in the fullest sense. He also favored the nationalization of the mines, of transport, and of the land; the raising of national revenue by a single tax on income; and the right of the unemployed to full maintenance and old-age pensions of one pound a week up to the age of 65. As the result of the Paisley election, Mr. Asquith was returned to Parliament. He

received 14,736 against 11,902 for the Labor candidate and only 3795 for the Coalition Unionist candidate. He took his seat February 25th, and became at once the recognized leader of the opposition. The government's policy seemed to take firm issue with the Labor party, which was blamed for the public discontent. Government spokesmen refused flatly to nationalize the coal mines. In regard to housing, it was said that the main obstacle came from the demands of Labor itself. Lloyd George in February presented the arguments against the plan for nationalization offered by the Miners' Federation, which he said was not a genuine scheme for nationalization, but for turning the mines over to the control of a single class. In Parliament a vigorous debate was carried on in February in the course of which the government was sharply criticized. The Independent Liberals accused it of failing to recognize that it was impossible for the late enemies of Great Britain to fulfill certain of the peace terms. Meanwhile the government had lost unexpectedly in the by-election at Wrekin in Shropshire, where a well-known London journalist associated with the chauvinist editor, Mr. Bottomley, won the election on an independent platform. The Labor candidate stood second and the government candidate lost by a large majority. On the other hand the government won soon afterwards at the by-election of Horncastle in Lincolnshire where the Labor candidate stood far below either of the other parties on the list. In by-elections at Stockport, Basingstoke, Northampton and Northwest Camberwell, the government candidates also won. On the other hand at Dartford, March 27, the Labor candidate was highly successful, turning the former Coalition majority of more than 9000 into a Labor majority of more than 9000. The Coalition candidate stood third on the list and this defeat marked the ninth seat lost to the government since the election of December, 1918. The attitude of the government party toward the progressive element was shown in the attack by Lloyd George upon the Labor party in March. He denied that the by-elections had developed any new opponents to the government, saying those who were now opposed to the Coalition were the same who had opposed it during the war, and that no party could have formed a strong government at the last election. If the by-elections were to be taken as a sign, they indicated not a Liberal advance, but a Socialist advance, and if there was a new general election, neither Liberals nor Unionists could count upon sufficient support to set up a stable government. The Liberal party was a party of Communism or Bolshevism and the independent Liberals who attacked the Coalition were weakening the common cause against the Socialists. Civilization was in danger in all countries and unless there were coöperation among the law-abiding elements there would be a general disaster. The government intended to proceed on the principle of a fair deal and a fair reward for individual effort. Even in comparatively moderate quarters the speech was described as more Tory in its spirit than any that the prime minister had recently made. After Lloyd George's "Tory" speech, Mr. Asquith made several statements all tending to show that the Liberals were not going to surrender to the hysterical fear of Bolshevism and embark on a class war. In regard to foreign policy, he said in the House that the replacing of the Sultan

in Constantinople was an intolerable solution of the Turkish question. It would have been well enough to leave him there with all his spiritual powers, but his political powers should have been assumed by the other nations. He criticized the government for its lack of clearness in explaining its policy in Mesopotamia. A definite breach between the Liberals and the Coalition government occurred in May, when the National Liberal Federation passed a resolution against the government, and there seemed no chance of a compromise henceforth between the Independent Liberals who supported Mr. Asquith and the members of the party who still remained loyal to the Coalition. At that time, however, the Independent Liberals had met with some reverses at the by-elections and on the same day that the above-mentioned resolution was passed, the government candidate, Sir Hamar Greenwood, who on his appointment as chief secretary for Ireland had to seek a reelection, won by a large majority over his Independent Liberal opponent. Mr. Asquith's attitude toward the Irish question was shown by the offer of an amendment to the Home Rule Bill which proposed to give to any county in Ulster the right to vote for exclusion from an Irish parliament at any time within six years. He explained that his plan looked to the creation in Ireland of a single parliament and a single executive, and he declared that the government proposals would lead to a chaotic condition and were wholly out of relation to the desires and necessities of the Irish people. As the year went on, the breach between the government and the Liberals widened, and the prime minister at the end of the year was apparently entirely divorced from his former party. In the House the government's most severe criticism came from its own side, that is to say, from among the Unionists. This was often brought out in the debates on the two leading problems, namely, the Irish bill and the budget. Nevertheless there was no sign of any weakening in the *bloc* on the government benches. Lloyd George was able to carry through several important ministerial changes in March (see below), and its strength in the country in the autumn was indicated by the victory of the government candidate at Ilford, September 25, by a majority vote over the combined polls of the Liberal and the Labor candidates.

At the annual conference of the Labor party which opened June 22, the usual statements in regard to the conflict between capitalism and the capitalist government on the one hand and labor on the other were made. In regard to Ireland, the government was declared to be responsible for the violence of a purely military rule and it was said that Ireland ought to have the form of government that she desired, even an independent republic if she chose. The demand was made that all British armed forces should be immediately withdrawn from Ireland. At an interview between the prime minister and representatives of Irish labor at this time, the former declared that it was impossible to form a truce with the extremists in Ireland. He said that the government could never expect the setting up of an independent Irish republic and compared his attitude to that of President Lincoln of the United States, when the Southern States demanded secession. He said it was the firm intention of the government to arm and defend the munition workers and if the railway men per-

sisted in their opposition to the government they would be held responsible for paralyzing the whole traffic of Ireland. See preceding section on the IRISH QUESTION, and the GOVERNMENT AND THE COAL INDUSTRY.

TRADE UNION CONGRESS. The 1920 annual meeting was held at Portsmouth, consisting of 955 delegates representing 6,505,482 members. On July 13 it passed by a vote of 2,760,000 to 1,636,000 a resolution recommending a general stoppage of work if troops were not withdrawn from Ireland. A deputation from the Congress was sent to the heads of the government, July 22, and received from Mr. Bonar Law the summary answer: "Stop the murders and we will remove the troops"; while Lloyd George declared that discussion was idle so long as the Sinn Feiners were irreconcilable.

TRADE WITH RUSSIA. On May 31st a meeting took place between Lloyd George and other members of the government with M. Krassin, who was nominally the head of the Russian Coöperatives, and who came to England as the chief of a delegation from the Soviet government. M. Kamenef was the political member of the delegation. It was reported that a Russian trade office was about to be opened in London, but by many it was suspected that the presence of the delegation in London was due rather to the design of promoting Bolshevik propaganda. The Krassin mission provoked the sharpest criticism in the French press, where it was considered an act of disloyalty to the alliance with France. Early in June members of the House of Commons evinced distrust of the Krassin mission and put a number of questions to the government in regard to its alleged political aspect. A debate followed in which the government was warned that the nation was seriously disturbed about the matter. The Labor representative argued that the action of the prime minister was welcome to the masses of the people. Others demanded that guarantees of the Soviet government's sincerity should be required before trade relations were resumed. Lloyd George defended the government's course saying that Russia had a prodigious quantity of material to dispose of. Because the British government disapproved of the Soviet government it did not follow that trade should not be resumed. He asked if Great Britain had never traded with countries guilty of atrocities and cited the case of Turkey. In September, difficulty arose from the alleged attempt of the Bolsheviks to bribe a British radical newspaper, the *Daily Herald*, in which M. Kamenef was accused by the British government of participating. He was also accused of being concerned in the sale of the Russian crown jewels in England. M. Kamenef left for Russia, after writing a letter denying the British government's contentions. Meanwhile in August there had been a long discussion between Lloyd George and the Russian envoy, M. Krassin, on the subject of the renewal of commercial relations. The British policy aimed at the three following results: (1) The exchange of British merchandise for gold and the importation of raw materials into England; (2) the turning of the Bolsheviks away from their projects in Persia, Turkestan and India; (3) the appeasement of the working class in England by a more or less complete recognition of the Bolshevik government. In all quarters hostile to this policy and particularly in that large part

of the press which had favored intervention in Russia and the support of every anti-Bolshevik leader, whether or not an adherent to the old régime, the policy of renewing the attempt of restoration of trade with Russia was attacked and ridiculed. Toward the end of the year, the Liberal and Labor party element in England attacked the government for its delay in coming to an agreement with the Soviets, but made an exception of Lloyd George, who they believed was trying to restore trade relations. It was hinted that a general strike would result if this policy was delayed. Committees had been formed during the summer, when Krassin was negotiating with the British government, and it was proposed that they should take measures to organize a strike. Lloyd George announced the policy of an Anglo-Bolshevik accord in December and there was much rejoicing in Labor quarters. It was believed that although in principle it only renewed trade relations it involved political reconciliation as well. The government had at that time not declared its opinion on the subject of the Russian debts. It was pointed out by financiers that if trade relations were renewed a loan to Russia would logically follow, because the Russians could not export merchandise without purchases and they lacked the money for this purpose. For the present there was perhaps enough Russian gold to begin the purchase of goods abroad, but this supply would soon be exhausted and then the European or American exporters would bring pressure to bear that loans be made to Russia in order to guarantee payment. The security for such loans would be a mortgage on Russian wealth and Russian territory, and the result would be the partition of Russian property among the foreign creditors. The decision to renew relations with Russia, reached after long delays and in the face of violent opposition and many difficulties, was among the most important event in international politics during the year.

LABOR AND BOLSHEVISM. A message was sent from Lenin to the workers of England May 30th, in which he renewed his previous accusation that England in spite of the Russian peace proposals was continuing her intervention in Russia by giving aid to Wrangel in the Crimea and to the White Guards in Poland. He declared that every educated person knew even before the revolution that the Czar had secret treaties with the robber governments of England, France, United States, Italy and Japan, for the distribution of booty at the expense of Constantinople, Galicia, Armenia, Syria, etc. He urged the formation in England of a Communist party to educate the working masses, saying that there was no danger that there would be too many Communists in England for at present they were practically non-existent there. He said that the persons who were really guilty of terrorism were not the Red forces but the Liberals of England and their allies who were conducting the White Terror in Finland, Hungary, India, and Ireland, and who had and were still supporting chiefs like Judenitch, Kolchak, Denikin, Pilsudski and Wrangel. The above message was brought back to England by two members of the Labor delegation on their return from Russia. These delegates declared that there was actual terrorism in Russia and that the Bolshevik leaders had said that force would be used so long as there was the possibility of a counter-revolution,

and so long as the Polish war continued. The general opinion of the delegates was that while the ideals of the Bolsheviks were good they were not practicable. As to liberty, the individual did not have as much industrial freedom in Russia as in England, but they believed that if Russia had peace and if trade relations were resumed, the country would become rich in a short time and that the leaders had shown a capacity for extending production. In August scattered groups of radicals formed a "National Communist Party," believing in the dictatorship of the working class, the Soviet system, and the Third (Moscow) International. Comments of the conservative press were to the fact that the leaders were little known and at that the membership did not exceed 5125. See SOCIALISM.

LORD GREY ON THE AMERICAN ATTITUDE. There was much discussion at the beginning of the year of Lord Grey's expression of views on the subject of the American attitude toward the Treaty. He expressed them not as an ambassador but as a private individual. He said that charges of bad faith or repudiation could not be justly brought against the United States or against the Senate on account of the failure to ratify the Treaty. Nor did he think that the United States could fairly be taxed with an undue regard for self-interest. The tradition of the United States was against all entanglements in European affairs. A possible conflict between the executive and the legislature was involved in the nature of the American constitution. He did not believe that the people wished to withdraw their influence from world affairs. While he thought the difficulties and dangers which Americans predicted as a result of the League of Nations would probably never arise, he at the same time believed their fear of them was sincere. As to the reservations he did not think that they weakened or injured the League in the manner that certain persons apprehended. See UNITED STATES AND WAR OF THE NATIONS.

ENGLAND AND FRANCE. In England the various attacks in the French press led in moderate quarters to an admission that in certain respects France had reason to complain of British foreign policy, but she certainly ought not to blame the British people. It was unfortunate that so many French writers saw fit to attack England and especially her prime minister at the very moment when the British were making great efforts to come to the aid of the people in the devastated regions of France. It certainly seemed impolitic to sow the seeds of enmity at such a time. A rupture between France and England at this moment would be an act of insanity and would surely play into the hands of Germany. There were vast numbers of people in England who would make any sacrifice for the sake of uniting the two nations. A great deal of the British comment confined itself to generalities such as these. In an interview on November 20th, Lloyd George condemned the quarrel-makers in both countries and defended the British position in respect to the reparations. He said that France and England were not at odds in this matter and would certainly stand together, but that there were everywhere people who tried to stir up strife. He did not believe that they would succeed. The question of reparations he admitted was an essential point for France, but it was of equal importance to England, for it was evident that the more France received, the

more England would receive also. The policy to pursue was very simple. It consisted merely in making Germany pay all that she could. The question was how much she was able to pay. England believed that the amount ought to be definitely fixed. To say that in so thinking she was moved by sympathy for Germany was absurd. It was obviously necessary for a debtor to know how much he was in debt and it was certainly not in the debtor's interests alone that he should have this knowledge; but of course the debtor's own statement of his account was not to be the final authority. The Powers must estimate his capacities and fix the amount due. The important thing was just that—the fixing of the amount—and as soon as it was done Great Britain would be firmly united to France in pressing the demand for payment. "I think I have," continued he, "shown by acts and not by words alone my great friendship for the French democracy. We have fought and gained the victory together and we must not renounce in times of peace the accord which for a long time has been dear to my heart. On the other hand, the French must not consider me an enemy simply because I speak like a man of business and a realist. Friends must always speak to each other frankly and support the method which is best for their common interest." See WAR OF THE NATIONS.

ANGLO-EGYPTIAN RELATIONS. In the autumn it was still a question how far the British government would go toward meeting the demands of Egypt for her entire independence. Negotiations between the Egyptian delegates and Lord Milner's mission resulted in an agreement on certain points in a programme bestowing on Egypt a modified independence. Some of the Egyptian delegates who had been conferring in London returned to Egypt apparently to secure the approval of this policy. The main points in it according to the London *Times* were: The recognition by Egypt of the privileged position of Great Britain on the Nile; Egyptian consent in case of war to give the British all facilities of approach in Egyptian territory; maintenance by Great Britain of a garrison in Egypt in the canal zone; bestowal on Egypt of freedom in her foreign relations provided she abstained from the formation of treaties contrary to British policy; suppression of the capitulations, the control of legislation affecting foreigners to devolve on a British high commissioner. The Egyptian view of this matter was thus set forth by the Egyptian Nationalists and their sympathizers in the French press. In the first place there was the important omission of the Sudan from the proposed arrangement. It was recalled that in 1899 Great Britain had imposed on the Khedive a convention, that had never been ratified by Turkey, whereby the Khedive ceded to England part of the rights that he possessed over the Sudan, forming it into a sort of condominium of England and Egypt. But a series of decrees forbade the Khedives to abrogate rights granted to Egypt by the Turkish government or to alienate any part of Egyptian territory. Later Turkey signed the treaty in which she renounced all rights over Egypt, but it was pointed out that this Anglo-Egyptian agreement formed without regard to the legitimate rights of Egypt had no standing from the point of view of either national Egyptian or international law. During the Anglo-French dispute over Fashoda, England had rec-

ognized expressly that the Sudan was a genuine possession of Egypt and by virtue of that interpretation France was obliged to evacuate Fashoda, thus herself recognizing that Sudan was a part of Egypt. From an economic point of view Egypt could not dispense with the Sudan, for whoever was the master of the Upper Nile controlled also the Lower Nile, that is to say, Egypt. The neutrality of the Suez Canal was guaranteed by the convention of Oct. 29, 1888, which entrusted to Egypt the duty of keeping the route open in the interest of international commerce. As to the canal zone the Egyptian delegates had declared that they were ready to recognize the neutrality of the canal under the League of Nations, which solution would be to the interest of all the Powers. As to the right of access to Egypt in case of war, that also might threaten the neutrality and security of the canal as well as the legitimate rights of all the Powers who had a direct interest in the free navigation of the canal. It was pointed out also that the presence of an English army on Egyptian territory might make Egypt the battleground of conflicts in which she had no interest. The limitation of Egypt's right to make treaties was again a serious restriction. The condition imposed, namely, that all treaties must be in accord with British interest, would handicap Egypt in her economic development if it were to her interest to form agreements with England's commercial competitors. It was moreover an attack upon the sovereignty of Egypt in that she would not be independent in regard to her foreign policies but would have to secure English consent in advance to any agreement that she wished to make with a foreign state. The Egyptians were opposed to placing the control over legislation affecting foreigners in the hands of a British high commissioner. Such a control would also impair the sovereignty of Egypt.

The above comments are from French sources and illustrate the spirit of French criticism of British foreign policies throughout the year. In general the French critics sided with the party opposed to the British government's foreign policies wherever dissension showed itself. The general tendency of all French writers was to accuse on every possible occasion the British government of self-seeking and disregard for the rights of others. This was in accordance with a widespread belief that Great Britain was getting the lion's share for herself after the war. For discussion of this and other matters relating to foreign affairs, see **WAR OF THE NATIONS**.

THE ARMISTICE CELEBRATION. An impressive feature of the Armistice celebration was the burial of an unknown soldier in Westminster Abbey. A similar ceremony took place in France (q.v.), where an unknown soldier was buried at the Arc de Triomphe. In the English ceremonies the body was brought on a gun carriage to Whitehall in the presence of the generals, admirals, higher clergy as well as the representatives of the throne, the prime minister and his cabinet.

THE PRINCE'S TOUR. A long and successful voyage was made by the Prince of Wales during the year, in the course of which he visited Australia and New Zealand, and was everywhere received by marks of great enthusiasm. On account of his fatigue he was unable to carry out the plan of paying a visit to India in the winter

of 1920 in honor of the new era to be brought in by the reform measures of the government. Toward the close of the year the Duke of Connaught was appointed to take his place and set out for Madras.

GREAT LAKES. See **DOCKS AND HARBORS**.

GREECE. A kingdom in the southeast of Europe between the Ægean and the Ionian seas, consisting of the lower part of the Balkan peninsula, the island of Crete, and the new territories acquired after the Balkan wars. The mainland is nearly cut in two by the gulfs of Patras and Lepanto on the west and the Gulf of Ægina on the east. In addition to the continental portion there are the archipelago of the Ægean Sea and the Ionian islands. Capital, Athens.

AREA AND POPULATION. Before the Balkan wars the area was given at 25,014 square miles with a population in 1907 of 2,643,109. The area of the new territories, comprising Macedonia, Epirus, the Ægean islands and the island of Crete, etc., was placed at 16,919 square miles, giving a total in 1913 of 41,933. The population of the new territories according to the provisional census of 1913 was 2,101,616. The total population was estimated in 1914 at 4,821,300. With the consent of the Allied Powers, Greece occupied North Epirus, taking formal possession in March, 1916. The population of that region was placed at about 250,000. After the war Greece also occupied with the consent of the Powers a part of western Thrace which had been held by Bulgaria and the larger part of the former Turkish province of Aidin in Asia Minor, having for its principal town Smyrna. Athens, the capital and principal city of Greece proper had a population in 1907 of 167,479. The largest cities of the new territories and of those occupied in 1920 were with their populations in 1915: Saloniki, 157,889; Korytza (in North Epirus), about 40,000; Candia, 25,185; Canea, 24,399; Cavalla, 23,378. The population of Athens and the Piræus was placed in 1919 at about 300,000 and in that year the population of Saloniki was reported to have increased to about 250,000. The majority of the inhabitants are Greek Orthodox. Education is compulsory between the ages of six and 12 years, but the law is not well enforced and illiteracy prevails. The primary schools in 1917-18 numbered 6799 with 476,695 pupils and 8641 teachers. There were besides, 76 high schools and 425 middle schools with 55,408 pupils. At Athens are the two universities, the National University and the Capodistria University.

PRODUCTION AND INDUSTRY. The interests are mainly agricultural. About one-fifth of the land is cultivable. The forests have steadily diminished but recently great efforts have been made to restore them. The land is mainly in the hands of peasant proprietors and farmers under the metayer system, though there are a few large proprietors. The chief cereals are wheat, barley, corn, rye, and mezzlin, but the most important crop is that of currants which covers an extremely large area. The yield of currants in 1919 was 145,000 tons. Next in importance are olives. The olive production in 1918 was 31,702,800 gallons. Tobacco in 1919 yielded 57,198,485 pounds; nuts in 1919, 4,486,185 pounds; wine in 1918, 10,566,800 gallons. The other important industries are the fig industry, oranges, mandarines, and lemons. The minerals worked include: Magnesite, iron, lead, emery, nickel, zinc, copper,

manganese, aluminum, antimony, tin, cobalt, lignite, salt, etc. See AGRICULTURE.

COMMERCE. The following table supplied by the United States Bureau of Foreign and Domestic Commerce in 1920, shows, by countries, the value of imports into and exports from Greece during 1914, 1917, and 1918 (1918 is the latest period for which statistics are available):

Greece and Turkey. It was composed in 1920 of representatives of Great Britain, France, Italy, and Russia. The revenues from the sale of salt, kerosene, matches, playing cards, cigarette paper, tobacco, stamped paper, emery from Naxos, the customs receipts at certain ports, and certain surtaxes on tobacco were placed under the control of this commission, which supervised the pay-

Countries	Imports from			Exports to		
	1914	1917	1918	1914	1917	1918
	Drachmas	Drachmas	Drachmas	Drachmas	Drachmas	Drachmas
Great Britain	65,103,652	13,735,343	84,255,201	44,819,222	29,559,833	82,940,340
Egypt	4,071,818	18,133,466	61,712,768	14,613,406	22,696,881	84,130,170
United States	21,199,373	109,715,269	86,029,558	29,370,647	27,479,103	90,874,155
Austria-Hungary	58,986,263	271,075	351,192	8,886,887	240	.....
Belgium	5,304,379	23,620	18,761	4,742,905	.....	.....
Bulgaria	7,814,566	3,825	356,871	1,838,605	.....	.....
France	23,411,075	29,483,609	82,697,819	11,753,568	19,717,593	62,521,982
Germany	27,797,223	179,369	49,115	10,152,495	.....	.....
Switzerland	1,525,352	2,013,227	4,169,874	859,005	375,928	30,082
Italy	21,466,852	27,387,871	79,787,888	25,300,349	9,514,318	17,596,200
Netherlands	6,549,686	1,510,747	564,418	9,338,485	10,087	.....
Roumania	11,481,194	.....	24,821	2,351,942	.....	.....
Russia	30,394,081	128,431	107,689	2,891,805	.....	.....
Serbia	7,476,007	327,138	1,792,075	1,591,540	.....	2,904,548
Turkey	15,189,259	86,170	261,889	4,277,544	.....	98,776
All other countries	11,075,692	20,126,330	831,748,720	6,776,007	3,272,594	5,763,998
Total	318,846,472	223,075,490	733,907,099	178,564,362	112,626,577	296,860,251

Exports to the United States in 1919 were valued at 30,191,304 drachmas as against 18,479,763 in 1918. Of these the chief item continued to be tobacco leaf—22,681,873 drachmas in 1919 and 17,295,451 in 1918. The figures for the period under consideration exceeded those of any year since the establishment of commercial relations between the two countries. The principal items showing gains were currants, figs, furs, gum mastic, aromatic herbs, marble, olive oil, opium, skins, sponges, tartrate of lime, and wool. Olive-oil shipments to the United States began again with the removal of the prohibition against exportation existing in 1918.

FINANCE. The following information in regard to the finances, shipping, etc., was supplied by the United States Bureau of Foreign and Domestic Commerce: During the war three elements, among others, gave the Greek drachma a strong position on the changes of the world—the presence of large Allied armies, with the consequent expenditures of large sums for local and immediate needs, the earnings of the Greek merchant marine (in great part under requisition to Allied governments), and the sums sent into Greece by Greeks residing in the United States. Against these favorable elements in the exchange situation must be noted the inability in 1919 to realize credits held in certain countries, the depletion in some measure through the rush to buy articles of luxury in America and Europe, of which the country had been long deprived, the restrictions on exchange transactions imposed by the government, which latter induced many holders of foreign exchange to retain their capital abroad for trading purposes, etc. The general result of these unfavorable elements was gradually to impair the strong position held by the drachma, which toward the end of 1919 began to show evidences of weakness in comparison to the dollar, with which it had been successfully maintained theretofore. The full effect of this, however, was not seen until the early spring of 1920. The drachma as valued in United States currency stood at 5.19% cents in June, 1919, and at 8.0612 in June, 1920.

The International Financial Commission was established in 1898, following the war between

Greece and Turkey. The receipts for 1919 exceeded those of any previous year in the life of the commission and are almost double those of 1914. The receipts of 1914, 1918, and 1919 were as follows: 1914, 82,209,932 drachmas; 1918, 90,138,297 drachmas; 1919, 158,039,887 drachmas. The gains registered for the 12-month period were marked in the receipts from the various customhouses of the kingdom; this was naturally reflected in sales of stamped paper entering into commercial and other transactions. Matches, salt, and kerosene, as articles of prime necessity, the sale of which was particularly hampered during the war as a result of difficulties of transportation and communication, showed satisfactory gains over 1918. The moratorium continued in effect during 1919 with a tendency toward a modification of some of its features, notably in the matter of rents.

COMMUNICATIONS. On Jan. 1, 1920, the Greek mercantile fleet was composed of 228 steamers of 430,237 tons. At the same time 754 sailing vessels, of a combined tonnage of 108,218 tons, flew the Greek flag. To these figures should be added 214 small craft on the Danube, some 94 smaller boats at Galatz, and about 29 tugboats at Constantinople. The Greek mercantile fleet of steamers was largely divided among seven companies. A number of vessels were owned by individuals or unincorporated groups.

During the year 1918 all rail and water lines were under the control of the government; this control continued over the railway lines and was expected to lead to the ultimate taking over of all independent companies by the federal authorities. Those navigation companies which lost ships during the war and other ship-owners who gained handsome profits as a result of operations of the past few years were active buyers of ships in 1919-20.

During 1919 American vessels arriving at Piraeus numbered 37, of a combined carrying capacity of 123,305 tons. Cargoes consisted of salt, coffee, coal, flour, sugar, and frozen meat from Canada. There were also a number of general cargoes. But three ships with a tonnage of 6283 flying the American flag arrived in 1918.

DEFENSE. The approximate strength of the

army at the beginning of 1920 was 200,000 men. Demobilization had not yet been completed on account of the large number of troops engaged in the operations in Asia Minor. The army constituted 12 divisions, the average strength of each being 12,000. The number of vessels in the navy were two warships of 13,000 tons each, one of 10,118, three of 5000 each, and one of 2600 tons, and there were also 13 destroyers, and a number of torpedo boats, two submarines, and miscellaneous craft.

GOVERNMENT. The executive power is in the hands of the King, who acts through a responsible ministry. Legislative power is in the Boule, and in the Council of State. The former comprises 316 deputies, including those from the new territories. The ministry at the beginning of 1920 was as follows: Premier, E. K. Venizelos; Vice-President of the Ministerial Council and Minister of Marine, E. Repoulis; Minister of War, M. Grivas; Minister of Foreign Affairs, N. Politis; Minister of the Interior, M. Raktivand; Minister of Finance, M. Negropontis; Minister of Justice, J. Tsirimocos; Minister of Food Supplies, P. Bourloulmis; Minister of Education, D. Dingas; Minister of Agriculture, G. Kafastaris; Minister for Refugees, S. Simos; Minister of Communications, A. Papanastasiou; Minister of National Economy, K. Spyridis; and Ministers without portfolio, A. Michalacopoulos and M. Sterghiadis.

HISTORY

OPPOSITION TO VENIZELOS. To what extent the power of Venizelos rested upon the consent of the people was not definitely known, but it had been hoped by the Allied Powers that it was firmly based. He had acted steadily in concert with the Allies during the war and afterwards. As to his own country he had secured through the peace great advantages in respect to territory. On the other hand he was successful in carrying out the requests of the Allies in Asia Minor. He established Greek authority firmly in Smyrna and the surrounding territory, driving out the Turkish Nationalists and preparing the way for the signature of the Treaty of Sèvres, and he acquired for his country the sovereignty over the Turkish portion of Thrace. The policy of Venizelos down to the spring of 1915 seemed to have the full approval of the people. At that time they were beginning to question the attitude of the King who in spite of his record in the Balkan wars of 1912-13 was losing some of his popularity. He seemed to repudiate the principles on which those wars had been waged. When the late war began his policy consisted in benevolent neutrality toward Serbia, and therefore toward the Allies, and the government declared that if Bulgaria attacked Serbia, Greece would take part in the war against Bulgaria. Another feature of his policy was a careful watch lest any Balkan nation should secure territory at the expense of Greece, and finally after Turkey entered the war, an attempt to obtain possession of Thrace, the Aegean islands, and the coast of Asia Minor. In this policy Constantine and his Prime Minister, Venizelos, had been in accord, but Constantine believed that the Germans would win the war, while Venizelos had a profound faith in the ultimate success of the Allies. The course subsequently followed by Venizelos led to a great loss of life and treasure and the question arose after the war whether Greece would not have been better off if she had followed the policy

of neutrality favored by Constantine throughout.

Under Venizelos there had been a strict repression of all elements favorable to Constantine, even though they had been loyal to the government throughout the war. Many officers and soldiers had been driven into exile. The censorship of the press concealed these incidents, but when in the summer of 1920 the censorship was lifted, knowledge of them was spread abroad. Venizelos was generally condemned by his opponents for ambition and for subserviency to England and France. The government was accused of lavish expenditures in its foreign policy. It was found that the crops could not be gathered because of the absence of able-bodied men who had been called to the front and who according to the critics were fighting the battles of England and France. An active propaganda was carried on to spread these views and from its headquarters at Lucerne, Switzerland, the campaign was ably conducted.

Meanwhile the government of Venizelos was being carried on by an assembly which had been elected on May 31, 1915. This assembly had been dissolved by Constantine six months afterwards, but was called by King Alexander after his father's expulsion. This was naturally an embarrassment. The critics did not refer to the unconstitutionality of recalling this assembly but they dwelt on various unconstitutional acts of Venizelos. They characterized as unconstitutional his invitation to the Allies to occupy Greek territory at Saloniki. They called his setting up a provincial government in Crete an act of treason, and they condemned him for assuming power after the expulsion of Constantine. At the time of the expulsion, the French High Commissioner wrote to King Constantine's Prime Minister, M. Zaimis, a letter calling upon the King to abdicate. In this he said that the King had openly violated the constitution and had lost the confidence of the protecting Powers and that he had therefore been authorized to demand the King's abdication. To this the Prime Minister replied that the King had decided to leave the country and had appointed as his successor, Prince Alexander. According to the papers issued from Lucerne afterwards, the King had been dethroned against the will of 90 per cent of the people who would have fought for him had he called upon them to do so. It was further said that the Greeks had suffered needlessly and to a terrible extent. The King's supporters appealed to the principle of President Wilson that every country should determine its own destiny as giving the Greeks the right to say whether or not they wanted King Constantine. In short, the situation was represented by the partisans of Constantine as one artificially forced upon Greece by the policy of the Allies during the war.

There were many discontented persons who joined the opposition on account of alleged maladministration during the frequent absences of Venizelos at Paris and London. While Venizelos blamed his ministers for the wholesale arrests and other arbitrary acts he himself was held to account for them. Along with the supporters of Constantine, there was a large number of pro-Germans and Socialists. Many were less desirous of the return of Constantine than of the overthrow of Venizelos. These included all who were opposed to the republican system, for the establishment of republican gov-



KING CONSTANTINE



CROWN PRINCE ALEXANDER



M. VENIZELOS



PREMIER DEMETRIUS RHALLIS

RULERS AND STATESMEN PROMINENT IN GREECE DURING 1920

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ernment was the ultimate aim of Venizelos, although he did not believe that the country was at that moment ready for it.

THE ELECTIONS. In the November elections the main issue was the policy pursued by Venizelos during and since the war, especially the expulsion of King Constantine. The former Prime Minister, Gounaris, had accepted the challenge of the Liberal followers of Venizelos and agreed that the election would serve as a popular referendum on this issue. The results as announced on November 15th were entirely favorable to the opposition including the personal defeat of Prime Minister Venizelos in his own constituency. No serious disorders were reported during the election contests.

CABINET CRISIS. On November 16th, the Venizelos cabinet resigned on account of the victory of the opposition in the elections. All but two of the ministers had been beaten in the elections and the returns published at that time gave 250 Royalists to 118 supporters of Venizelos. This was followed by reports of an impending revolution and by lamentations in France and England over the probable return of ex-King Constantine. A new cabinet was now formed under the former Premier, M. George Rhallis. The new Prime Minister took his oath of office in the presence of Admiral Coundouriotis who was acting as regent. In addition to the Prime Minister who also held the portfolio of Foreign Affairs and Justice, the Ministry comprised the following: M. Boldris, Minister of the Interior; M. Nicolas Kalogeropoulos, Minister of Finance and Provisions; M. Demetrios Gounaris, Minister of War; M. John Rhallis, Minister of Marine; M. Theodore Zaimis, Minister of Education and Pensions; M. Petro Mauromeghali, Minister of Economy and Agriculture. Thereupon the regent resigned and it was arranged that the other members of the cabinet were to take their oath before the Queen Mother, Olga. Out of the 369 Deputies elected 287 were reported to be loyal to the King. In spite of the opposition to a continuance of the forward policy of Venizelos it was reported on November 21st, that the cabinet had decided to go on with it and it was expected that Greek troops in Asia Minor would shortly begin a new offensive.

RECALL OF KING CONSTANTINE. It was learned on November 17th, that ex-King Constantine refused to go to Athens as the head of any one political party, but insisted on a plebiscite before he would return himself or permit any one of his sons to do so. The plebiscite was held, December 5. According to the preliminary returns, it gave a large majority in favor of the return of the former king. The voting did not occasion any disorder, but it appeared not to be taken seriously since it seemed a foregone conclusion that the decision would be in favor of the recall. According to the press reports only royalists voted in certain parts of the country. The meeting of Parliament was postponed for a month. It was reported that new elections would shortly be held in order to secure the King a larger majority in the Chamber, where at present there were 120 votes against him.

King Constantine reached Athens, December 19, and was received by vast crowds with great enthusiasm. Meanwhile France had withdrawn her representative and it was reported that England had instructed hers to have no official relations with Constantine.

ALLIED GOVERNMENTS AND THE KING. The Supreme Council of the Allies at London on December 3d announced to the public that all financial support would be withdrawn from Greece if Constantine were returned to the throne and that the Allied Powers would consider the question of the territorial reprisals. The conference also decided to protest internationally against the issue by the Greek government of 200,000,000 drachmae in currency in spite of the objection of the Allies. At this time the treaty of Sevres had not been ratified and the Allies therefore had the power to revise it, so far as Greece was concerned. They could if they chose change completely the status of Smyrna. According to the view of certain French groups, Smyrna would be safer in the hands of the Turks than the hands of Constantine. On the other hand certain British authorities believed that Constantine who had promised that he would pursue the policy of Venizelos in regard to the acquisitions of Greece would carry on an effective campaign, being himself a successful commander. The question was complicated further by the fact that the Greeks in the recent elections had given evidence that they had tired of the policy of foreign expansion and were unwilling to fight for their claims in Asia Minor.

Meanwhile, Venizelos left Athens for Nice on board a Greek yacht, escorted by a British cruiser and two British destroyers. The news of the Greek situation caused much anxiety in official circles in France and according to the newspaper correspondents, the French were beginning to plan a change in their Near Eastern policy. Instead of holding off from any arrangement with the Turks it was now proposed that overtures should be made to the Turkish Nationalists. There had been much talk in Paris of the failure of the Greek expedition into Asia Minor which had never been highly approved, being regarded as an Anglo-Greek arrangement. It had no success in checking the National Turkish movement and rumors were circulating that there was serious demoralization in the Greek forces on account of the conflicts between the supporters of Venizelos and the supporters of the ex-King Constantine. There had also been rumors of mutinies arising from the desire of the men to return home. There was talk in France about reducing the area occupied by the Greeks. An article in the *Temps* declared that the best thing to do was to negotiate with the Nationalists. This would necessarily involve the rejection of the Turkish treaty. Such a policy was said to be the best for French interests and justified in the circumstances. The French view of the situation in Greece was that the former Allies of Greece in general and the protecting Powers in particular had uncontested rights in the matter and that if the Greek people were free to recall a ruler that pleased them, England and France were equally free to refuse diplomatic recognition to one whom they did not think worthy of their confidence. At first it had even been argued by French writers that the return of King Constantine ought to be forbidden.

THRACE. In the autumn, Eastern Thrace was still under Greek military control, the officers having their headquarters at Adrianople. Western Thrace with its capital at Gumoldjina was under a governor-general, and was still engaged in organizing the civil government. Efforts were being made by the military in the eastern divi-

sion to win over the 25,000 Bulgars to the support of the Greek government, and to come to an arrangement in respect to religious administration that was satisfactory to the 57,000 Turks of the region. See *ARCHÆOLOGY*.

GREELEY, EDWIN SENECA. Banker and Civil War veteran, died January 10. He was born at Nashua, N. H., May 20, 1832, and worked at the trade of locomotive building in his youth. Entering the Civil War he served with distinction and was made brigadier-general of volunteers, March 13, 1865. After the war he worked for 20 years in an electric and railway supply company which became E. S. Greeley and Company, and lasted until 1897. After that he was engaged in banking in New Haven, Conn. He was a member of many important social and educational institutions.

GREEN, JAMES MONROE. Educator, died, November 1. He was born in New Jersey, Aug. 29, 1851; and was educated at the New Jersey Normal School and at Dickinson College. He was principal of New Jersey normal schools and president of the State Teachers' Association. In 1889 he proposed the method of approving high schools, which was adopted by the State. In 1910-11 he was president of the Association of Colleges and Preparatory Schools of the Middle States. From 1899 to 1917 he was principal of New Jersey State Normal and Model Schools.

GREENAWALT, ELMER ELLSWORTH. Immigration Commissioner, died March 8. He was born at Lancaster County, Pa., June 1, 1862. After working as a cigar-maker until 1886 he devoted himself to the organization of trades unions and became the editor of the *Labor Leader* at Lancaster, Pa., continuing in that work for 23 years. He represented the organizations of Labor at the State capital, and also before Congress, during 15 years, and was president of the Pennsylvania Federation of Labor, 1902-12. On May 1, 1914, he was made Commissioner of Immigration at the port of Philadelphia.

GREENLAND. Next to the island continent Australia, the largest island in the world, with an area variously estimated at from 826,000 square miles to 849,429 square miles. It is for the most part uninhabited and the settled portion constitutes a colony belonging to Denmark the area of which is given variously at from 34,015 square miles to 46,740 square miles. Population in 1911, 13,449. The largest settlement is the city of Sydproven with a population in 1911 of 789, and the smallest Skansen with a population of only 46. The trade with the colony is a monopoly of the Danish government and is largely in seals, seal skins, fish, oil, and blue fox skins. The head of the administration is a director who resides at Copenhagen.

GREGORY, STEPHEN STRONG. Former president of the American Bar Association, died in Chicago, Ill., October 24. He was born at Unadilla, N. Y., Nov. 16, 1849; removed to Madison, Wis., 1858, and graduated at the University of Wisconsin, 1870. He then practiced law at Madison and subsequently at Chicago where he was counsel in many important cases. Along with John P. Wilson, he successfully defended the law which created the sanitary district of Chicago. He was also a lawyer for the defense in the celebrated murder case of Prendergast and in the Debs conspiracy trial. He was for a short time special counsel for the Federal Trade Commission and in 1917 was appointed war commis-

sioner of the Chicago Bar Association. In 1911 he was elected president of the American Bar Association. In politics he was a Democrat.

GRENADA. One of the Windward Islands in the West Indies belonging to Great Britain. Area, 133 square miles. The colony includes one-half of the Grenadine Islands, the other half being under the administration of St. Vincent. Population, estimated Dec. 31, 1918, at 73,881. The capital and chief town is St. George's, with a population of 4916, mainly negroes. In 1918 there were 59 government or government-aided elementary schools with an enrollment of 9845 pupils. The chief products are spices and cocoa, which are also the chief exports. Other imports in order of their importance in 1919 were cotton, manufactures, flour, dried and salted fish, and various foodstuffs. Revenue in 1918-19 was £110,116 and expenditures £107,981. The public debt in 1919 was £192,180. The total shipping entered in 1918 was 260,268 tons. Governor and commander-in-chief, resident at St. George's, Sir G. D. Haddon-Smith.

GRENADINES. See *GRENADA* and *ST. VINCENT*.

GRIFFES, CHARLES TOMLINSON. American composer, died in New York, April 8. He was born in Elmira, N. Y., Sept. 17, 1884. Having received his first instruction in his native town, he spent four years in Berlin, studying under Jedliczka, Klatte, Rüfer, and Humperdinck. After his return to America he was in charge of the department of music at the Hackley School in Tarrytown, N. Y. His name did not become widely known until shortly before his death, when the performance of his symphonic poem, *The Pleasure-Dome of Kubla Khan*, by the Boston Symphony Orchestra attracted general attention. His premature death deprived America of a composer who held out unusual promise. His other works are *The Kairn of Koridwen*, a dance-drama in two scenes; *Schojo*, a Japanese mime-play; two pieces for string-quartet; three poems of Fiona MacLeod for soprano and orchestra; a sonata in F for piano; minor pieces for piano, and songs.

GRIFFITH, Sir SAMUEL WALKER. Australian official, died August 9. He was born, June 21, 1845, and educated at the University of Sydney. In 1874-78 he was attorney-general of Queensland, and he was Prime Minister in 1883-88, 1890-93. From 1893 to 1903 he was Chief Justice of Queensland and Lieutenant-Governor from 1889 to 1903. He translated Dante's *Divine Comedy* and published *The Queensland Criminal Code*.

GROVES, CHARLES EDWARD. British chemist, died, February 1. He had been vice-president of the London Chemical Society from 1899 to 1902 and before that was for many years the editor of the Society's *Journal*. He was born in 1841. He left a bequest to the Royal Institute for the promotion of scientific research.

GRUBICY, VITTORE. See *PAINTING AND SCULPTURE*.

GUADELOUPE. A French colony in the Lesser Antilles, consisting of two islands separated by a narrow channel, with a combined area of 722 square miles, and having five dependencies of smaller islands, whose area is 688 square miles. Population as estimated unofficially in 1919 was 213,229. Capital, Basse Terre, with a population of 8656. The chief city is Pointe-à-Pitre (population, 22,664), with an excellent

harbor. The chief products are coffee, sugar, vanilla, cacao, and rum. Two steam navigation companies maintain direct communication with France and there is a wireless station at Destrelan. It is locally administered under a governor and an elected council. It sends to the French Legislature one Senator and two Deputies.

GUAM. An island belonging to the United States, situated in the Pacific Ocean between 13° 13' and 13° 39' north latitude and 144° 37' and 144° 58' east longitude. Area, estimated at 225 square miles; population in 1920, 14,724, of whom 548 were foreign residents and 478 were at the Naval station. The pupils of school age in 1920 numbered 1894 of whom 1769 were in daily attendance. The imports in 1920 amounted to \$408,264 and the exports to \$34,133. The leading imports were foodstuffs, cotton tissues, cigars and tobacco, refined sugar, and refined petroleum. The revenue amounted to \$155,836 and the expenditures to \$137,206 for the fiscal year ending June 30, 1920. The estimate of revenue for the fiscal year 1921 was \$175,725. Governor in 1920, Capt. William W. Gilmer.

GUATEMALA. A Central American republic in the western part of Central America, extending from the Caribbean Sea to the Pacific Ocean. Capital, Guatemala City. Area, estimated at from 43,641 square miles to 48,290 square miles, the estimates diverging on account of boundary disputes; population, estimated unofficially, Dec. 31, 1917, at 2,123,091, of whom about 61.5 per cent were Indians, the larger portion of the remainder being mestizos. Guatemala City had a population variously estimated at from 90,000 to over 100,000. It was in large part destroyed by one of the most violent earthquakes ever known in Central American history, which began in November, 1917, and lasted into the early months of 1918, but the city was being rebuilt in 1920. Other towns are: Coban (30,770); Quezaltenango (28,940); Totonicapan (28,310). The movement of population during the year ending March 1, 1920, was as follows: Births, 69,758; deaths, 63,790; marriages, 3799.

EDUCATION. Primary instruction is free and compulsory between the ages of six and fourteen. No later statistics were available than those given in the preceding YEAR BOOK, which showed 1942 government schools with an attendance of 54,745. The institutions of higher learning include the University of Guatemala, opened in 1918; the Normal Central Institute; a school of handicraft for women; a conservatory of music; a school of art; and schools of commerce, law, medicine, pharmacy and dentistry. Measures for the extension of public instruction were taken in the course of the year, including the establishment of a night school for workmen, a school for native Indians, and the opening of new elementary schools.

PRODUCTION. The soil is very fertile, yielding tropical and sub-tropical products. Along the seacoast and further inland large banana plantations cover thousands of acres, and the country raises for its own and other foreign consumption about 10,000,000 bunches of bananas a year. The valley of the Motagua River is considered one of the most densely vegetated regions in the world. The chief crop of the country, however, is coffee, which is raised for the most part on the slopes of the mountains, 1500 to 5000 feet above sea level. In 1919 the coffee crop was estimated approximately at 1,100,420 quintals (a quin-

tal=101.4 lbs.). The other crops in the order of their importance are platanos and bananas, maize, beans, rice, and potatoes. The forest area was placed at 1,316,482 acres and contains rich supplies of mahogany and dyewoods, most of which are exported to the United States. The production of ferro-chromium is important. During the fiscal year ending March 1, 1920, the mines of this mineral in the departments of Jalapa and Estrada Cabrera produced over 2,250,000 kilos, most of it coming from the former department.

COMMERCE. No later figures for commerce were available than those in the preceding YEAR BOOK, which showed that in 1919 foreign trade was distributed among the foreign countries in order of value as follows: United States, United Kingdom and Belize, France, Mexico, and Central America. The total imports for 1918 were \$8,991,573; exports \$11,319,000.

COMMUNICATIONS. The principal lines form a part of the international railway of Central America, and extend from Puerto Barrios to the city of Guatemala, 194½ miles, and thence to José on the Pacific Ocean, a distance of 74 miles. Various extensions were in process of construction or under consideration, including a survey for the new Eastern railway, to run from Santa Maria to El Patimar. The tonnage in 1919 of vessels entering the ports was 696,885 tons, of which 422,929 tons were American.

FINANCE. Revenue during the fiscal year ending March 1, 1920, was 127,249,489 pesos, an increase of 15,312,164 pesos; expenditure, 101,028,476 pesos. The following figures in detail in regard to receipts and expenditures were issued by the Secretary of the Treasury in 1920: Receipts: Customs revenues, 80,104,225 pesos; liquor taxes and government monopolies, 30,511,955; sundry revenues, 6,825,907; telegraph and telephone, 5,269,727; and postal receipts, 4,447,675. Expenditures: Department of home government and justice, 12,729,091; foreign relations, 619,062; treasury, 6,938,237; public credit, 452,491; fomento (promotion), 4,030,151; war, 22,848,920; public instruction, 6,530,222; exchange, 37,635,869; telegraph and telephones, 6,523,465; postal department, 8,489,115; other expenditures, 757,318.

GOVERNMENT. The executive power is vested in a president elected for six years and the legislative power in a national assembly and a council of state, the former consisting of representatives elected for four years by universal suffrage and the latter of thirteen members, a part of whom are elected by the national assembly, and a part appointed by the president. President in 1920, Don Carlos Herrera.

HISTORY. A revolt broke out on April 7 against the president, Estrada Cabrera, who was accused of ruling tyrannically, and of torturing, imprisoning and executing those who opposed him. He was overthrown on April 17th. the immediate issue being that of the Central American Union, to which he was opposed. Dr. Carlos Herrera was appointed provisional president in his place and the new government was recognized by the United States. On September 15, the new president took the oath of office before the National Assembly. The programme set forth among the aims of the administration the establishment of close and friendly relations with the United States and Mexico. A plan was under consideration for an international bridge over the

Suchiati River, to be built at the expense of the Guatemalan and Mexican railways. On November 1st., representatives from the municipalities of Costa Rica, Guatemala, Honduras, Nicaragua and Salvador met in Antigua and issued a proclamation advising the union of all five states under a single government for Central America. The unionists of Guatemala agreed in a meeting with those of Salvador upon resolutions favoring a single government to be presented at a new meeting of the representatives from the five states. Among the measures to be considered were wireless telegraph systems, customs tariffs, coinage, weights and measures, and coastwise trade. In October ex-president Estrada Cabrera was still in prison as a result of the revolution. On November 22nd he requested the intervention of the President of the United States on behalf of his release.

GUILLAUME, CHARLES EDOUARD. French physicist to whom was awarded the Nobel prize for physics in 1920. Many important discoveries especially in connection with alloys have been due to him. He was born about 1860, the son of a watchmaker, and he made his first important discovery in 1896 when he found an alloy that was of a more stable nature than platinum and which he called "invar" from its invariable quality. This transformed methods of measurement of geodesic bases and reduced the cost to 2 per cent of what it had been 20 years before. As a result of the employment of the new material it was possible to measure the Simplon in five days. This steel-nickel compound when the steel component amounted to 45 per cent equaled in expansive power the combination of platinum and glass. It was possible to employ it during the war in place of platinum for the soldering of the filaments of electric lights and to continue the manufacture of the bulbs after the stock of platinum had begun almost to disappear. He was a member of the Academy of Sciences at Stockholm, and of the French Institute, and an officer of the Legion of Honor.

GUINEY, LOUISE IMOGEN. American poetess and essayist, died at London, England, November 2. She was born at Boston, Mass., in 1861, and began to publish volumes of verse in 1884. In 1899 she published the *Martyr's Idyl and Shorter Poems*. She also wrote a number of volumes in prose, including a volume of essays in 1897, and a biography of Hurrell Froude (1904), and edited the works of Matthew Arnold and others.

GUISASOLA, VICTORIANO (MENENDEZ). See ROMAN CATHOLICS.

GULLAND, JOHN WILLIAM. British Liberal politician, died at Manchester, England, January 28. For some time past he was the chief Liberal whip in the Asquith ministry. He was born in Edinburgh in 1864, educated at the University of Edinburgh, and entered Parliament in 1906, serving for 12 years. From 1909 to 1915 he was the Junior Lord of the Treasury and Scottish whip and later became the chief government whip. In 1915-17 he was Joint Parliamentary Secretary to the Treasury. He went out with the rest of the Asquith cabinet. He was a radical in politics and a keen and uncompromising politician, but personally popular with members of all shades of opinion.

GUNTHER, CHARLES FREDERICK. Manufacturer, died, February 10. He was born in Germany March 6, 1837; came to the United

States in 1842 and after receiving a public school education became a cashier in a bank. He was the manufacturer of a celebrated confectionery, 1868-1915. He interested himself in the collection of relics, manuscripts, etc., and his collections of Washington and Lincoln relics were well known.

GUTHRIE, CHARLES JOHN, Lord. Scottish jurist, died, April 28. He was born at Edinburgh in 1849, educated at the University there, and admitted to the bar in 1875, acquiring a large practice. He was legal adviser of the Free Church of Scotland, 1881-1900, and of the United Free Church, 1900-02; president of the Royal Scottish Geographic Society, 1917. He wrote *John Knox and His House* (1898), and edited Knox's History of the Reformation in Scotland.

GYMNASTICS. The national Amateur Athletic Union championships and Olympic try-outs were held at New York City, July 22. The winners in the individual events were: horizontal bar, Curt Rottman, N. Y. Turn Verein; parallel bars, Joseph Oszy, N. Y. A. C.; side horse, Charles M. Cremer, N. Y. A. C.; flying rings, J. D. Gleason, Los Angeles A. C.; rope climb, Louis Weissman, 92d Street Y. M. H. A.; Indian club swinging, Ray Dutcher, N. Y. A. C.; tumbling, Arthur W. Nugent, Newark Turn Verein; all-around, Joseph Oszy, N. Y. A. C.

The United States Naval Academy won the intercollegiate championship, scoring 25½ points. The University of Pennsylvania was second with 13½ and Yale third with 11. Other scores were Princeton 6; Haverford 4; Massachusetts Tech. 3. Perry Potter of Yale won the all-around championship, J. S. Long of Haverford finishing second.

GYPSUM. About 2,430,000 short tons of crude gypsum were mined in the United States in 1919, an increase of 373,000 tons over the output of 1918, according to estimates of the United States Geological Survey. This increase was in striking contrast to a decrease in 1918 from 1917 amounting to 24 per cent. The following table shows the distribution by States:

CRUDE GYPSUM MINED IN THE UNITED STATES, 1918-19, IN SHORT TONS

State	1918	1919 (estimated)	Increase or decrease in quantity mined (per cent)
Iowa	827,927	482,000	+ 32
Kansas	54,958	78,060	+ 42
Michigan	286,768	339,000	+ 18
New York	531,038	573,000	+ 08
Ohio	199,456	254,000	+ 28
Oklahoma	126,208	120,000	- 05
Texas	157,888	176,000	+ 12
Wyoming	41,877	52,000	+ 24
Other states *	831,395	406,000	+ 23
	2,057,015	2,430,000	+ 18

* Includes Arizona, California, Colorado, Montana, New Mexico, Oregon, South Dakota, Utah, and Virginia.

HAITI. A West Indian republic occupying the western part of the Island of Haiti or Santo Domingo, but the other portion of the island constituting the Dominican Republic. Capital, Port au Prince. The area is estimated at 11,072 square miles; estimated population on the basis of the church registers in 1909 was 2,029,700; and the estimated population in 1912 was 2,500,000. The density was greater than that of any other Latin-American republic with the exception of Salvador. About 90 per cent of the population are negroes and the language spoken is

a dialect of French. Estimates of population of cities vary widely. The largest city is Port au Prince, the capital, with an estimated population in 1919 of 101,272 (other estimates 120,000). Other cities are Cap Haitien with an estimated population in 1919 of 18,952 but according to other estimates, 30,000; Gonaïves 30,000 (other estimates 8,000) and Cayes, 12,000 to 15,000; Port du Paix 5000 to 10,000.

PRODUCTION, COMMERCE, etc. Agriculture is the chief occupation and coffee is the most important product. Cocoa, cotton, tobacco, sugar and rum are produced in considerable quantities. The forests yield logwood and other valuable woods which are exported. The exports in 1916-17 amounted to \$7,220,289 and the imports to \$8,606,055. The chief exports were: Coffee, logwood, etc., cocoa, cotton, honey, hides, gum, etc. From Oct. 1, 1919, to June 30, 1920, the foreign trade of the republic amounted to 4,809,072 gourdes (par of gourde \$0.25, exchange rate approximately \$0.20) and \$4,430,340. The imports were valued at 4,809,072 gourdes and \$2,164,082; the exports, at \$2,055,850.

FINANCE. There is an inconvertible paper currency, the monetary unit being the gourde or dollar with a fluctuating value in the market. At the end of 1920 its market value in United States money was \$.25. The revenue is derived mainly from customs. The budget for 1918-19 balanced at \$3,999,646 currency gourdes. The report from the commission of public credits showed that the total national debt to date amounted to 180,182,187 gourdes, divided as follows: Consolidated debts, 96,466,191 gourdes; floating debt, 50,645,751 gourdes; and time loan, 33,070,245.

GOVERNMENT. The executive power is vested in a president, elected for four years by the legislature and the legislative power in a national assembly consisting of two chambers, namely, the Chamber of Communes and the Senate, members of the former being elected for three years by popular vote and of the latter for six years by popular vote. By the Haitian Treaty ratified by the National Assembly in November, 1915, and by the United States Senate in February 1916, the United States established a virtual protectorate over the republic. See preceding YEAR BOOKS. President in 1920, M. Sudre Dartiguenave. See the article UNITED STATES, paragraph on *Relations with Haiti*.

HAITOVITCH, ABRAHAM. SEE MUSIC, Artists, Instrumentalists.

HALE, SARAH J. British educator, died, April 20. She was well known in the course of a long career in the training of teachers and was principal of the training college for teachers at Edge Hill after 1890. Her earlier work was in the new training college of St. Katharine's where she began to teach in 1878. In 1885 she went to Newnham College, Cambridge. She was one of the committee appointed to inquire into the conditions of pupil teachers and their training, in 1903. She wrote on the teaching of infants and instruction in needlework.

HALL, ERNEST. Lawyer, died, February 9. He was born in London, England, Oct. 24, 1844; came to the United States and enlisted in the New York Volunteers in the Civil War; studied law at New York University and was a justice of the City Court, 1881-08. In 1902 he was made justice of the Supreme Court of New York. In politics he was a Republican.

HALL, HENRY. Newspaper correspondent, died, February 6. He was born in England; came to America in his childhood; and was educated in the common schools. He entered newspaper work in 1881 and was on the editorial staff of the *Pittsburgh Commercial Gazette*, 1884-5. In 1891 he became legislative correspondent for the *Pittsburgh Dispatch* and from 1893 to 1906 was Washington correspondent for the *Pittsburgh Times*. After 1907 he was correspondent for the *Pittsburgh Chronicle-Telegraph*. In 1887, 1889, 1901, he was a member of the Pennsylvania House of Representatives. In politics he was a Republican.

HAMILTON COLLEGE. A non-sectarian institution of the higher learning at Clinton, N. Y., founded in 1812. There were 318 students enrolled for the fall session of 1920. There were 28 members on the teaching staff, including one addition. The productive funds amounted to \$2,136,750. The income amounted to \$100,493. There were about 86,000 volumes in the library. President, Frederick C. Ferry, Ph.D., LL.D.

HAMPTON NORMAL AND AGRICULTURAL INSTITUTE. An institution for the education of negroes and American Indians, at Hampton, Va., founded in 1868. The enrollment for the summer school of 1920 was 447 and for the regular fall session, 891. The faculty numbered 117. The productive funds of the institution amounted to \$3,632,960 and the income from endowment fund amounted to \$222,950. The total income from all sources, including special gifts was \$422,875. There were 42,937 volumes in the library. President, Rev. James Edgar Gregg, D.D.

HAMSUN, KNUT. The Nobel Prize (q.v.) for literature which had been withheld since 1916, was awarded to Knut Hamsun, the date for the formal presentation being fixed at December 10. Hamsun was born in 1860 and in his youth turned his hand to many trades. A lecture tour that he undertook in this country having failed he worked for a time as a conductor on the street cars in Chicago. His writings which have been translated into many languages include: *Pan* (1894); *At the Gates of the Kingdom* (1895); *The Game of Life*; *Sunset Glow* (the three last named constituting a trilogy, all three dealing with the same central figure); *Vendt the Monk* (1903); *Children of the Time* (1913); *The Growth of the Soil* (1918); *The Shallow Soil*, and *Hunger*, one of his earlier books, published in the United States in 1920. After his unfortunate experience in America, he published a book called *The Spiritual Life in America*, commenting unfavorably on American characteristics.

HANLEY, J. FRANK. Former governor of Indiana and Prohibition candidate for the presidency, died, August 1. He was born at St. Joseph, Ill., April 4, 1863; educated in the public schools; admitted to the bar in 1889 and began the practice of law at Williamsport in the same year. He was member of Congress, 1895-97, and Governor of Indiana, 1905-09. In 1916 he was the nominee for the presidency of the United States on the Prohibition ticket. He afterwards returned to the practice of law at Indianapolis and also gave lecture tours. Among his other interests was journalism and he was editor-in-chief of the *National Enquirer*.

HARBORS. See DOCKS AND HARBORS.

HARDING, WARREN G. Republican candi-

date for President in 1920. He was born in Corsica, Morrow County, Ohio, Nov. 2, 1865, educated at the Ohio Central University, and began his career as a printer on a local paper in Marion, Ohio. He passed successfully through the stages of reporter, circulation manager, business manager, editor and publisher of the leading Marion newspaper called the *Marion Star*, which became the most influential daily in that portion of the State. He was a member of the State Senate in 1900-1904, lieutenant-governor, 1904-6, and ran for governor in 1910 but was defeated; in 1914 he was elected a Republican member of the United States Senate for the term of 1915-21. At the Republican National Convention in 1912 he nominated Mr. Taft for the presidency and he was chairman of the Republican convention in 1916, making the key-note speech. His political position was that of a regular supporter of the dominant group in the Republican party that bitterly opposed the Roosevelt element. His nomination was a surprise to the country at large for although he had won a certain reputation in Congress as an orator he was not generally known as a prominent figure in politics. In the debates over the treaty he supported the Lodge reservations in the Senate. See UNITED STATES, *Presidential Campaign*.

HARDY, E. J. British clergyman and author, died near Dublin in October. He was especially celebrated as the author of *How to be Happy though Married* (1884), which was translated into many foreign languages. He was born in Armagh, Ireland, May 7, 1849, and graduated at Trinity College, Dublin, taking honors. Ordained as priest in 1875, he was army chaplain, 1878-1908, serving at many points, including the Far East and Canada. In 1898-99 he was lecturer at Trinity College, Dublin. His first book, above mentioned, was followed by many others including, *The Business of Life* (1892); *Mr. Thomas Atkins* (1900); *Concerning Marriage* (1901); *Love, Courtship and Marriage* (1902); *How to be Happy though Single* (1909); *The British Soldier* (1915).

HARRIS, ELIJAH PADDOCK. Chemist and college professor, died at Warsaw, N. Y., December 9. He was born at Le Roy, N. Y., April 3, 1832; graduated at Amherst in 1855; and took his doctor's degree at the university of Göttingen in 1859. After serving as professor of chemistry, Victoria College, Canada, and at Beloit College, Wisconsin, he was professor of chemistry and at Amherst from 1868 to 1907, when he retired on the Carnegie foundation and became professor emeritus. He wrote a standard text on *Qualitative Chemistry* in 1875 which passed through 10 editions.

HARRIS, HENRY TUDOR BROWNELL. Rear-admiral, United States Navy, died in 1920. He was born at Hartford, Conn., March 10, 1845, and was in the Volunteer Navy during the Civil War. He served in the paymaster's department, rising to the rank of pay director, June 13, 1902, and paymaster general in 1905, when he retired with the rank of senior rear-admiral. He took part in the North China campaign and the Philippine revolt.

HARRISON, CONSTANCE CARY. (Mrs. BURTON HARRISON), American novelist, died at Washington, D. C., November 21. She was born in Fairfax County, Va., in 1843 and lived in Richmond, Va., during the Civil War. After

studying abroad she married Mr. Burton Harrison, a lawyer, and lived for many years in New York City, but spent much time in travel abroad. The best known of her novels had to do with conditions in fashionable life, the earliest of them to attract wide attention being: *The Anglomaniacs* and *Sweet Bells Jangled out of Tune*. She began writing in the 1870's, and published a number of short stories and serials in the magazines. Other novels that may be mentioned are, *The Bachelor Maid*, *Errant Wooing*, and *Good Americans*. Besides novels and stories she wrote books on fairy tales and several plays.

HARTZLER, HENRY BURNS. Bishop in the United Evangelical Church, died September 3. He was born in York County, Pa., March 23, 1840, and educated in the common schools. He was at first licensed to preach in the Methodist Church and later was ordained to preach in the Evangelical Association and administered to parishes in Pennsylvania. After 1892 he was a member of the United Evangelical Church, in which he was bishop in 1902-10.

HARVARD UNIVERSITY. A non-sectarian institution of the higher learning at Cambridge, Mass., founded in 1636. In the summer schools of 1920, there were 2077 students. There were 5597 students enrolled for the fall session. The teaching staff numbered about 800. There were several notable additions to the faculty, namely: William MacDougall of Corpus Christi College, Oxford, Professor of Psychology; Wilbur C. Abbott, formerly of Yale, Professor of History; Allyn A. Young, formerly of Cornell, Professor of Economics; Dr. Richard C. Cabot, well-known physician, author, and social worker of Boston, Professor of Social Ethics; Morton C. Campbell, formerly of the University of Missouri, Assistant-Professor of Law; Chester A. McLain, Assistant-Professor of Law; Calvert Magruder, Assistant-Professor of Law; John C. Callan and Durward E. Burchell, both formerly of the University of Wisconsin, Professor of Industrial Management and Professor of Industrial Accounting, respectively; Daniel Starch, formerly of University of Wisconsin, Assistant-Professor of Business Psychology; Frank A. Vanderlip, New York banker, Lecturer at the Business School; and A. Kingsley Porter, formerly of Yale, Professor of Fine Arts. The productive funds of the institution amounted to about \$44,000,000, while the income from endowment amounted to about \$2,800,000. The gross over-turn was \$5,000,000. The library contained about 2,000,000 books and pamphlets. There were various changes in instruction, etc. The Graduate School of Education founded partly through the assistance of the General Education Board and largely through the results of the Harvard Endowment Fund Campaign, for both men and women opened in September. It is a school for the professional training of school superintendents, principals, and teachers, and for research in educational problems. A new plan of work was adopted at the Harvard Engineering School, whereby the students will spend part of their time in classroom work and part in work in industrial plants and engineering concerns near Cambridge, thus combining theoretical instruction with practical experience. The Harvard Graduate School of Business Administration and the Engineering School joined in laying out a five-year programme of study in 'business en-

gineering." Starting with the Class of 1922, all seniors except those specializing in the natural sciences will be obliged to pass general examinations in the field in which they are concentrating. This programme includes the engineering training given in the regular four-year course at the Harvard Engineering School and also the fundamentals of business as taught in the Harvard Graduate School of Business Administration. Beginning with the Class of 1922, all seniors in Harvard College except those specializing in the natural sciences, will be obliged to pass before graduating *general examinations* in the field in which they are concentrating, this examination not only to cover the courses which the individual student may have taken in that subject, but to call for outside reading. This new plan is an extension of the system of general examinations which was adopted several years ago for men concentrating in History, Government, and Economics, and which has proved highly successful in that field. The Harvard Endowment Fund campaign was carried on from the autumn of 1919 through the autumn of 1920 under the direction of an Endowment Fund Committee appointed by the Harvard Alumni Association, and resulted in a fund of over \$13,000,000. President, Abbott Lawrence Lowell, LL.D., Ph.D.

HAVERFORD COLLEGE. An institution of the higher learning under the control of the Society of Friends at Haverford, Pa., founded in 1833. There were 214 students enrolled for the fall session. The members of the faculty numbered 24. Two new instructors were added: John Alexander Kelly, Ph.D., instructor in German, and John Saegu Bradway, A.M., LL.B., Lecturer on Contracts. The productive funds amounted to \$2,885,374, and the income for the year amounted to \$367,976. The library contained 82,000 volumes. An endowment fund of \$500,000 was established. President, William Wistar Comfort, Ph.D., LL.D.

HAWAII. A Territory of the United States, consisting of an archipelago of nine inhabited islands, Hawaii, Maui, Oahu, Kauai, Molokai, Lanai, Niihau, Kahoolawe, and Midway, besides a number of small uninhabited islands. The island of Hawaii is the largest and was formerly the most important, and has thus given its name to the group. The following information concerning population, production, commerce, etc., was supplied by the Governor's report for the fiscal year ending June 30, 1920: The population of Hawaii on Jan. 1, 1920, as shown by the Fourteenth Census of the United States, was 255,912. Compared with a population of 191,909 in 1910, this represents an increase during the 10 years of 64,063, or 33.4 per cent. The first census of the Hawaiian Islands was taken in 1832 and was followed by a census in 1836, 1850, 1853, and 1860. These were very simple and rudimentary in character. There was no provision for taking a census at regular periods until 1865, when the legislative assembly made it the duty of the board of education to make a complete census of the Kingdom every sixth year, counting from the year 1860. These were taken until 1896, and in 1900 the first Federal census was taken.

Immigrants in the year ending June 30, 1920 numbered 616, of whom 361 were Japanese and 184 Filipinos; emigrants, 2172, of whom 1807 were Japanese, and 138 Filipinos.

POPULATION OF HAWAII, 1832 TO 1920

Year	Population	Year	Population
1920	255,912	1872	56,897
1910	191,909	1866	62,959
1900	154,001	1860	69,800
1896	109,020	1853	73,138
1890	89,990	1850	84,165
1884	80,578	1836	108,579
1878	57,985	1832	130,313

POPULATION OF HAWAII, BY ISLANDS, 1920

Island	Population	Island	Population
Hawaii	64,895	Midway	81
Kahoolawe	8	Molokai	1,784
Kauai	29,247	Niihau	191
Lanai	185	Oahu	123,496
Maui	86,080		

Hawaii is divided into five counties, one of which (Hawaii) is coextensive with the island of the same name, and Honolulu, the largest county, comprises the two islands of Oahu and Midway. The city proper, of Honolulu, the capital, has a population of 83,237, according to the Federal census; Hilo, island of Hawaii, has a population of 10,431. See below under *Racial Conditions*.

AGRICULTURE AND FORESTRY. Conditions throughout the Territory were exceedingly prosperous largely as a result of the high price of sugar, which is the main crop of the islands. Sugar and pineapples continue to be the main crops of the islands. The yield of sugar for the year 1920 is estimated at 568,671 tons; that of pineapples 6,000,000 cases. On Feb. 1, 1920, several thousand plantation laborers on the island of Oahu went on strike, claiming dissatisfaction with the wage system existing. The strike lasted until June 30, 1920, when the laborers decided to return to work on the same wage conditions as when they had left. The difficulty arose over the application of the bonus system. When the price of sugar began to rise, the plantations decided they would share the profit with the laborer and voluntarily agreed to give a bonus. One of the provisions was that the laborer should stay on any one plantation for a year and work at least 20 days out of each month. A certain amount of the bonus was paid each month and a portion kept back until the end of the year to guarantee the laborer remaining for that length of time. Among the reasons advanced for the strike were the following: That the laborer should be entitled to the bonus if he worked but 15 days in a month; that instead of being paid as a bonus the pay should be as wages; that a larger percentage of the bonus should be paid each month and less held back until the end of the year, or that all of the bonus should be paid each month. This bonus system has had a very disastrous effect in many lines of activity throughout the Territory. While the sugar plantations could afford to pay the bonus, as their product was selling at an extremely high price, people not in the sugar business found it absolutely impossible to pay corresponding salaries or wages, with the result that many of their men who were formerly satisfied quit their work.

The total area included in the 47 forest reserves throughout the Territory amounted in 1920 to 817,114 acres, or about 20 per cent of the total land area of the eight main islands in the group. Of the area in forest reserves 557,344 acres, or 68 per cent, was land belonging to the Territory. Eleven forest and grass fires, none of them very

extensive, were reported during the fiscal year, a surprisingly low number in view of the very dry condition which prevailed. SEE AGRICULTURAL EXTENSION WORK

COMMERCE. Imports for the year ending March 31, 1920, amounted to \$63,283,647; exports amounted to \$104,779,804. Of the imports, those received from the mainland amounted to \$53,669,174, and those from foreign countries to \$9,614,473. Of the exports, the shipments to the mainland totaled \$101,194,733, and to foreign countries \$3,585,071. The foreign trade by countries is shown in the following table:

IMPORTS AND EXPORTS BY COUNTRIES*				
Countries	Imports		Exports	
	1919	1920	1919	1920
Australia	\$188,289	\$472,683	\$36,141	\$12,827
Other British Oceania	67,914	70,472	106,720	94,286
British India	1,372,469	1,534,924	.....	703
Canada	431,760	141,730	3,975,849	340,104
Chile	871,328	1,358,012	.....	.....
France	1,822	8,263	.....	.....
Germany	1,535	.....	.....	.....
Hongkong	465,209	769,901	7,485	15,011
Japan	4,558,499	4,774,228	548,758	328,847
United Kingdom	47,095	80,655	1,114	923,372
Other foreign	866,404	408,610	164,840	1,869,921
Total foreign	8,322,319	9,614,473	5,840,907	3,585,071
United States	42,421,474	53,669,174	82,409,114	101,194,733
Grand total	\$50,743,793	\$63,283,647	\$88,250,021	\$104,779,804

* For fiscal years ending March 31.

The following table shows domestic exports by articles in 1919 and 1920:

requisites for enrollment in such classes require that the pupil shall make satisfactory progress

DOMESTIC EXPORTS BY ARTICLES, FISCAL YEARS 1919 AND 1920*				
Articles	United States, 1920		Foreign, 1920*	
	Quantity Pounds	Value	Quantity Pounds	Value
Sugar	1,070,124,077	\$78,589,467	389,395	\$37,292
Coffee, raw	2,051,811	521,816	708,735	211,077
Fruits and nuts .....	.....	18,508,028	.....	1,294,923
Rice	2,394,426	238,218	86,400	8,336
Hides	1,497,786	876,227	.....	.....
Other .....	.....	2,627,088	.....	2,002,756
Total .....	.....	\$101,061,294	.....	\$3,554,384

Total, 1920				
Articles	Quantity Pounds	Value	Quantity Pounds	Value
Sugar	1,070,513,472	\$78,626,759	1,167,594,808	\$68,497,289
Coffee, raw	2,760,046	782,393	7,639,220	1,184,148
Fruits and nuts .....	.....	19,808,951	.....	12,116,344
Rice	2,480,826	246,554	.....	181,950
Hides	1,497,786	876,227	.....	337,611
Other .....	.....	4,829,794	.....	5,623,883
Total .....	.....	\$104,615,678	.....	\$87,891,225

* For fiscal years ending March 31. * Mostly pineapples.

EDUCATION. The public schools in 1920 numbered 173 and the private schools, 59. At the end of the fiscal year the number of pupils enrolled in the public schools of the Territory was 38,295, an increase of 6.07 per cent over the previous year's enrollment. There were 7406 in the private schools, or 237 more than the year before. There were 1161 teachers in the public schools, of whom 1018 were female; and 384 in the private schools, of whom 301 were female. There are two industrial schools, one for boys and the other for girls with an attendance of 159 and 138, respectively. Concerning the foreign language schools the Governor's report contained the following recommendations and statistics:

in the other work of the public school; that enrollment be by written or oral request of the parent; and that the parent may, if it seem desirable, be required to pay as a monthly fee the pro rata cost of providing teachers for such classes.

CLASSIFICATION OF PUPILS IN THE PUBLIC SCHOOLS, BY RACES			
Hawaiian	3,293	Porto Rican	1,088
Part Hawaiian	4,100	Chinese	3,721
Anglo-Saxon	1,033	Japanese	17,541
Scandinavian	34	Korean	506
Spanish	879	Filipino	941
Portuguese	5,304	Others	373
Total	38,295		

The College of Hawaii in 1920 had 242 registered students. By an act of the 1919 Legislature, effective July 1, 1920, a University of Hawaii was established. The new institution grew out of the College of Hawaii and was to have that institution as its basis. Consequently the year 1919-20 was the last year of the college as heretofore organized.

TRANSPORTATION. In 1920 the public steam railways had a mileage of 349; and the private (plantation) lines of 628. The gross tonnage of vessels entering the ports during the year ending June 30th, was 5,430,976, an increase of 1,970,771 over the preceding year.

FINANCE. Valuation of all real and personal property in the Territory as rendered by the tax assessors was \$287,006,792, which was \$36,482,446 more than the assessed valuation the year before. The treasury cash balances, all accounts, amounted, July 1, 1920, to \$3,370,648, as compared with \$2,365,979 the year before. The total revenue collected during the fiscal year was \$8,719,898; total disbursements were \$10,949,897. The chief revenue of the Territory is through its income-tax law, which has been in successful operation since 1901. One of the sections of the act allows a "deduction for all government taxes." At the time the law was passed, there was no thought that Congress would some time pass an act which would cause the taxpayers of Hawaii to pay in a single year to the Federal government income taxes amounting to nearly \$12,000,000, as was the case during the fiscal year ending June 30th. As the Territorial tax was 4 per cent, this meant a loss to the Territory of about \$480,000 a year.

TERRITORIAL OFFICIALS. The leading officials of the Territory in 1920 were as follows: C. J. McCarthy, Governor; C. P. Iaukea, Secretary; Harry Irwin, Attorney-General; Delbert E. Metzger, Treasurer; C. T. Bailey, Commissioner of Public Lands; Lyman H. Bigelow, Superintendent of Public Works; Vaughan MacCaughey, superintendent of Public Instruction; J. L. Coke, Chief Justice Supreme Court; J. K. Kalaniana'ole, Delegate to Congress.

RACIAL CONDITIONS. For years Hawaii has served as a sort of racial experiment station, for the prejudice of race or even the prejudice of color seemed hardly to exist there, and to offer no obstacle to the mingling of the diverse elements. Comparatively early in the European settlement it was evident that little discrimination was made in the matter of marriage between the Europeans and natives. The color line seemed to be less regarded there than anywhere else. The natives though not relatively of a high civilization were singular in respect to their adaptability to the civilization of more advanced races, and remarkable for their lack of the usual vices of peoples at their stage of culture, as well as for the positive qualities of honesty, generosity, and general kindness. Much foreign labor was imported as the islands began to develop in industry. At first many immigrants came from the South Sea islands, but later this source ceased to supply them and this element in population almost disappeared. Then labor was secured from among the Chinese, Portuguese, Japanese, Spaniards, Filipinos, etc. The laws of the islands gave the right of American citizenship to immigrants, irrespective of race, as soon as they possessed the necessary qualifications, and all children born in Hawaii of immigrants are legally

Americans by birth. Owing to various conditions a tendency to the blending of races developed and there was no serious obstacle in the way. The alternative, that is to say, the policy of separating each race and encouraging its development along its own line would have resulted ultimately in a contest for control among the various elements and in all probability the right of the whites to remain the ruling class would have been disputed. The races are, however, to a certain extent gathered into their own communities. On the large plantations, for example, there are camps exclusively made up of Japanese, Chinese, Portuguese, etc., respectively, and they each speak their native languages and even publish newspapers in them. Language schools also exist, especially for the Japanese. These things have retarded Americanization, but in the public schools English is used and the national language schools are often attended after public schools hours. They are thought to be dying out and as the new generations grow up who have been educated in the English-speaking schools, there is less and less desire to keep up the separate institutions. Even among leaders and statesmen, especially among the Japanese, there has been a tendency to favor Americanization and exclusive attendance at English-speaking schools.

Japanese	110,000
Portuguese	25,000
Chinese	22,000
Hawaiians	22,800
Filipinos	22,600
Part Hawaiians ..	16,660
Porto Ricans	5,400
Spaniards	2,400
Other Caucasians ..	31,000
All others	5,800

The conditions in Hawaii have been of especial interest in connection with the Japanese question for as seen in the table above the leading racial element is the Japanese, who outnumber many times each of the other groups and were estimated in 1920 at about half the total population. It has been reported that in Hawaii, the Japanese adapt themselves with remarkable facility to American ideals and standards; that they learn the language at an uncommonly early age and employ it by preference; that the younger generation regards the American civilization as superior to their own, because in that community it brings them greater advantages. The superior ability of the Japanese in the schools has been so marked as to occasion embarrassment by necessitating the conferring of prizes on children of that race alone. In the spring of 1920, the question of the language schools as an unfavorable influence on Americanization was considered in a Federal survey and in the report that followed it was declared that they had no such tendency. It was, however, recommended that they should be dispensed with for other reasons and it was generally believed that they would disappear themselves, before long. Buddhist priests who were conducting most of the language schools admitted generally that Americanized education in the islands was the more useful. Japanese officials said the same thing. Indeed many of them went so far as to say that the Japanese there ought to be Americanized and to declare that if after being Americanized, they were not in case of war, loyal citizens, and if even

they would not fight against Japan, in the event of war between the United States and Japan, they would not be respected even by the Japanese themselves.

On the other hand those who feared the growth of a permanent and separate Japanese element in the United States and its possessions argued that, however superior the Japanese might be in many intellectual and moral respects and however adaptable to American civilization the fact remained that as a result of their distinctive physical type they would always be a race apart whether the strain was pure or mixed. In Hawaii with their growing population they would soon be in the majority and they would then elect the majority of the Territorial Legislature and finally would become masters of the islands. Once in the majority and in control they will naturally regard other races as inferior. Despite the considerations presented in preceding paragraphs it was declared that there was evidence of strong racial organizations among the Japanese of Hawaii, and that this was promoted by Japanese officials and aided by the priests of the Shinto and Buddhist temples. See ANTHROPOLOGY.

HAWKINS, RUSH CHRISTOPHER. American soldier and author, died in New York City, October 25. His death was the result of injuries received the night before when he was struck by an automobile on Fifth Avenue. He was born at Pomfret, Conn., Sept. 14, 1831; educated in the common schools; organized during the Civil War the Ninth New York infantry known as the Hawkins Zouaves and became its colonel, May 4, 1861; served with distinction in the Civil War and received the brevet of brigadier-general of volunteers March 13, 1865, for meritorious and valuable service; was honorably mustered out, May 20, 1865. He devoted himself to the collection of books especially those relating to the early history of printing and wood engraving. He was art commissioner to the Paris Exposition in 1889, and was an officer in the Legion of Honor. He established at Providence, R. I., the Annmary Brown Memorial containing paintings and various valuable books and manuscripts. He was the author of *Titles of First Books from the Earliest Presses; Better Than Men; Assassination of North Carolinians for Serving in the Union Army; Our Political Degradation* (1904); and a large number of pamphlets and magazine articles. He was a member of the New York House of Representatives in 1872.

HAY. The hay production of the United States in 1920 as estimated by the Department of Agriculture was 108,233,000 tons, of which 91,193,000 tons was tame hay and 17,040,000 wild hay. The season of 1920 was in general quite favorable for hay production. The area devoted to hay in 1920 was 73,181,000 acres, of which wild hay occupied 15,266,000 acres and the average yield per acre was 1.48 tons, slightly under the average yield of the preceding year. The average yield of tame hay was 1.57 tons and that of wild hay 1.12 tons per acre, as against 1.62 tons and 1.10 tons per acre respectively for the preceding year.

Early in 1920 hay prices were extremely high but during the fall, largely as the result of a favorable season and good pasturage, prices declined to a considerable extent. The average price of hay on the farm Dec. 1, 1920, was \$16.72 per ton and the total value of the year's crop

on this basis was \$1,809,162,000 while the corresponding price in 1919 was \$19.56 per ton and the total value of the 1919 crop \$2,134,581,000. The average farm price on December 1st for the five years 1914-18 was \$13.18 per ton. During the first quarter of the year hay prices in some of the principal European countries ranged from about \$12 per ton in Germany to \$55 in Switzerland, and prices from \$45 to \$50 per ton were maintained also in Great Britain and Denmark.

The high point of hay consumption in the United States was reached in 1919. Formerly nearly all hay was sold within 30 miles of the place of production, but now it is shipped to large city hay markets and even exported. This market movement of hay demands proper grading and baling. See also ALFALFA.

HAY FEVER AND ASTHMA. It is often convenient to consider these affections together because many cases of asthma are due to sensitization to certain nitrogenous substances. Drs. Vander Veer and Cooke have recently analyzed the records of 2000 of these cases, from the special viewpoint of treatment. The authors use saline extracts of pure pollens with special reference to the percentage of nitrogen contained. They no longer seek to prevent the hay fever by attempts at immunization during the cold weather. Instead they treat during the period of the fever giving a course of injections in increased amounts during the entire season. Personal observation and the results of a questionnaire sent out to patients show that about 25 per cent receive little or no relief while the remainder are satisfied with the treatment. About 25 per cent become quite free and 50 per cent comfortable under the treatment but results show some variation from year to year, certain years producing a more severe type of disease. They hope to continue to improve their percentages by controlling some of the factors as yet not fully understood.

Within the past few years our knowledge of asthma has greatly increased. Not many cases are due to food sensitization but in many instances we may accuse some kind of albuminous substance, presumably animal, in the dust, which contains such substances as chicken feathers, wool from mattresses, human epithelium, etc. But vegetable substances in the dust may exert the same influence. Extracts of special dusts may be used like mixed pollens, both for diagnosis and treatment. Multiple sensitization occurs in which it may be difficult to trace all of the exciting causes. Subjects with chronic bronchitis also present the latter as a complicating factor, which of course requires separate treatment. In a certain class of elderly patient the only results were obtained by autotherapy, using extracts of the patient's sputum. Until recently there had been no service for poor asthmatics and hay fever victims but clinics for this purpose will soon be installed.

HECKERT, CHARLES GIBVEN. College president, died at Springfield, Ohio, December 7. Until the summer of 1920, he was president of Wittenberg College. He was born at Northumberland, Pa., March 22, 1863; graduated at Wittenberg College in 1886 and at Wittenberg Theological Seminary, 1889, when he was ordained to the Lutheran ministry. He became professor of English and logic at Wittenberg College in 1893 and was president after 1903. He was one of the editors of the *Lutheran World*.

HEINEMANN, WILLIAM. British publisher, died, October 5. He was born at Surbiton, May 18, 1863 and founded the house which bears his name in 1890. As a book publisher he was known for his quick recognition of new writers and for the wide variety of his interests. His publications were widely distributed in the United States as well as in Europe. He was president of the Publishers' Association of Great Britain and Ireland, 1909-11, and president of the National Booksellers' Provident Society, 1913-20. His publications include many of the most celebrated books of their time for example Whistler's *Gentle Art of Making Enemies* (1890), and the works of such foreign writers as Tolstoi, Björnson, Couperus and Sienkiewicz. Other important and successful enterprises included short histories of *The Literature of the World*, which began in 1897 with Professor Gilbert Murray's *Ancient Greek Literature*. Many of the writings of Maeterlinck, Ibsen, D'Annunzio, Tourgeniev, were also among his publications. He was especially interested in the drama and published *The First Step* in 1895; *War* in 1901; etc. He left half of his estate to the Royal Society of Literature for a fund out of which money prizes were to be given to others who had produced work of genuine value. It was understood that by the wishes of the testator the prizes were to be so distributed as to reward especially authors of books in fields that were not financially remunerative.

HELICOPTER. See AERONAUTICS.

HELIGOLAND. An island, formerly fortified, in the North Sea, ceded by England to Germany in 1890. It was dismantled by Germany in 1919 under the terms of the Treaty.

HEMPHILL, ALEXANDER JULIAN, Financier, died in New York City, December 29. At the time of his death he was chairman of the board of directors of the Guaranty Trust Company. He was born at Philadelphia, Pa., Aug. 23, 1856, and in 1875 became a clerk in the Pennsylvania Railroad Company. He attracted the attention of his superiors by his tact and ability, and in 1883 was appointed secretary to the Norfolk and Western Railway, being the youngest holder of that position in the United States at the time. He remained with the Norfolk and Western until 1905, when he became vice-president of the Guaranty Trust Company, of which he was appointed president, Dec. 8, 1909. He retired from the presidency in 1915. The list of corporations on which he was director or other officer, is too long to give in full, but includes the following: The American Surety Company, Fidelity and Casualty Company, Hudson & Manhattan Railroad Company, Missouri Pacific Railroad, Southern Cotton Oil Company, United Gas and Electric Company, Texas and Pacific Railway Company. He began early in the late war to take an active part in war relief and was prominent in many relief associations. The French government recognized his services by making him a chevalier of the Legion of Honor. He was president of the Automobile Club of America and a member of many other clubs and associations.

HENNESSY, JOHN JOSEPH. See ROMAN CATHOLICS.

HEREDITY, See Zoölogy.

HERKLES, REV. SIR JOHN. British prelate and educator, died, June 11. He was vice-chancellor and principal of the University of St.

Andrews. He was born at Glasgow, Scotland, Aug. 9, 1855; educated at Glasgow University and in Germany, and having been ordained, was engaged in pastoral work till 1894, when he was appointed Professor of Church History in St. Andrews University. He held that chair till 1915, when, in 1911, he was made provost. He wrote a number of works on Scottish church history, Bible commentaries, and several volumes on the Archbishops of St. Andrews.

HERTZBERG, HANS RUDOLPH REINHART. American journalist, died, May 18. He was born at San Antonio, Texas, July 1, 1871, and was educated in St. Louis, Mo., in France, and in Texas. In 1892-94 he was engaged in the practice of law and in the editing of a small newspaper in Texas. He was later engaged in weekly journalism in San Antonio, Texas, and New Orleans. In 1903 he joined the staff of the *Times-Democrat* in New Orleans and was afterwards proprietor and editor of *Hertzberg's Weekly* (1908-10). From 1910 to 1914 he was on the staff of the *Chicago Inter-Ocean*.

HESSE. One of the states of the former German empire, having down to November, 1918, the status of a grand duchy; situated in the western part of Germany. Capital, Darmstadt; area, 2968 square miles; pop. (Dec. 1, 1919) 1,282,051. In 1918, there were 974 public elementary schools with 4166 teachers and 212,264 pupils. Its chief crops are rye, barley, potatoes and wine, and its chief manufactures, leather, clothing, paper, chemicals, vehicles, machinery, furniture, musical instruments, etc. The budget according to a British authority balanced in 1919-20 at £4,865,793. In common with the other states of Germany, it overthrew the government in the autumn of 1918. In November of that year a republic was proclaimed and a new constitution was drafted in 1919. The new Diet was elected Jan. 26, 1919, and a new ministry was appointed in February, 1919, under the premiership of Herr Ulrich, (Socialist).

HEURE ESPAGNOLE, L' See MUSIC, Opera.

HEWITT, JOHN HASKELL. College professor, died at Williamstown, Mass., October 6. He was born at Preston, Conn., Aug. 8, 1835, and graduated at Yale College, 1859, and at the Yale Theological Seminary two years later. After teaching Latin and Greek at the Olivet College, Mich., and Lake Forest College, Ill., he was appointed Professor of Ancient Languages at Williams College in 1882. In 1901 and 1902 he was acting-president and in 1903 was appointed Professor of Greek.

HIDES. See LEATHER.

HIGH SCHOOLS. See EDUCATION.

HILL, BENJAMIN. Mexican general, died at Mexico City, December 15. For a short time before his death he had been Secretary of War in the cabinet of the newly elected President, Obregon. He was reputed to be of American descent. Under the administration of Huerta, he was a Constitutionalist leader and he afterwards served under Carranza against Villa and Zapata. When Obregon left the Mexican capital in April, General Hill joined his party and he was one of the firmest supporters against Carranza. He had charge of the forces in the valley of Mexico after the surrender of the city, and he was appointed Secretary of War December 1.

HILLIER, FREDERICK J. British journalist, died June 11. He was born in 1870 and in his

youth was associated with the Paris edition of the *New York Herald*. He was later on the staff of London papers and finally became editor of the *Daily News*. He was a prominent figure in the British newspaper community.

HIRSCH, FRANZ. See GERMAN LITERATURE. **HISTORICAL ASSOCIATION.** AMERICAN.

This organization was founded for the promotion of historical studies in the United States. The 36th annual meeting was held at Washington, D. C., Dec. 27-30, 1920. Several other organizations held conferences there at the same time. The association publishes *The American Historical Review*, and *The Historical Outlook*. It awards the Justin Winsor Prize, and the Herbert Baxter Adams Prize annually, besides the Military History Prize. Much work is done through its committees which are composed of authorities on history from all parts of the country. The officers in 1920 were: President, Edward Channing; first vice-president, Jean Jules Jusserand; second vice-president, Charles H. Haasins; secretary, John S. Bassett; treasurer, Charles Moore; and chief editor, Allen R. Boyd. Headquarters of the association are in the Woodward Building, Washington, D. C.

HISTORY. See LITERATURE, ENGLISH AND AMERICAN.

HOCKEY. Ottawa, Canada, captured the Stanley Cup emblematic of the world's professional hockey championship, defeating Seattle in a five-game series by 3 matches to 2. Canada also won the world's amateur hockey honors through the victory of the Winnipeg Falcons at the Olympic Games (q.v.).

Several colleges in the United States had teams during 1920 but the Intercollegiate League again failed to conduct a series. The results of the games played indicated that Harvard had the strongest aggregation of players in the college world. Boston, Pittsburgh, Philadelphia, and Cleveland maintained hockey teams but New York City which in the past had been represented by brilliant sevens once more found itself unable to take up the game chiefly because of the lack of suitable rinks.

HODLER, FERDINAND. See PAINTING AND SCULPTURE.

HOG CHOLERA. See VETERINARY MEDICINE.

HOGS. See LIVE STOCK.

HOLCOMB, SILAS ALEXANDER. Former governor, died, April 25. He was born in Gibson County, Ind., Aug. 25, 1858, and studied law in Nebraska, where he was admitted to the bar in 1882. After holding the office of judge in that State he was made Governor, 1894-98, being elected as a Populist on the fusion of the Populist and Democratic parties. From 1900 to 1906 he was Justice of the Supreme Court of Nebraska and, July 1, 1913, was appointed a member of the Board of Commissioners of State Institutions.

HOLLAND. See NETHERLANDS.

HOLLYER, SAMUEL. Line engraver. See PAINTING AND SCULPTURE.

HOLMES CHRISTIAN R. Dean of the College of Medicine, University of Cincinnati, died in 1920. He was born in Denmark, Oct. 18, 1857, and educated in Denmark, Germany, and the United States. After 1908 he was the consulting ophthalmologist of the Cincinnati Hospital and after 1904 Professor of Otology of the College of Medicine in the University, subsequently

becoming dean. He held the office of president and other offices in important learned societies and during the war he was in charge of the Ear, Nose, and Throat Department, Base Hospital, at Camp Sherman, Ohio. The equipment and organization of the General Hospital in Cincinnati was largely due to his efforts.

HOME DEMONSTRATION. See AGRICULTURAL EXTENSION WORK.

HOME DEMONSTRATION. See AGRICULTURAL EDUCATION.

HOLY CROSS, COLLEGE OF THE. A Roman Catholic institution of the higher learning conducted under the Society of Jesus, at Worcester, Mass., founded in 1843. In the fall of 1920 there were 723 students enrolled. There were 44 members in the faculty. The library had about 60,000 volumes. A campaign for \$1,000,000 was successful. President, Rev. James J. Carlin, S.J.

HONDURAS. A Central American republic. Capital, Tegucigalpa.

AREA, POPULATION, ETC. The area is estimated at about 44,275 square miles and the population according to the census of 1916, was 613,458, which, however, was only an approximate estimate. Tegucigalpa, the capital, was also the largest city, with 28,950 inhabitants in 1914. Primary education is free and nominally compulsory from seven to fifteen years of age. The following statistics of education were supplied by the president in his message to the Congress in 1920: At the beginning of the school year, 1919, there were 970 primary schools, of which 926 were public, 12 private, 30 night schools, and 2 kindergartens. The total attendance was 45,442 pupils and 980 teachers. There were also 5 normal schools open, 1 for boys and 1 for girls in Tegucigalpa, 1 in Esperanza, 1 in Santa Barbara, 1 in Santa Rosa, and 1 in Juticalpa, which had, all told, 565 pupils registered. In Tegucigalpa the School of Commerce for men had 138 pupils and the commerce section of the college "La Instrucción" for young ladies had 19 pupils; in Santa Barbara the business course of the college of "La Independencia" had 22 pupils. Secondary education was conducted by the following 5 institutions: National Institute of Tegucigalpa, College "León Alvalado" in Comayagua, College "La Independencia" in Santa Barbara, the school of secondary education in Santa Rosa, and "La Fraternidad" in Juticalpa. The total enrollment of these institutions for the year was 265 pupils. The University of the Republic only gave courses in law, medicine, and surgery, there being 49 students in the law school and 40 in the medical school.

PRODUCTION. The chief crop is bananas which are grown chiefly on the Caribbean seacoast. Cocoanuts are also raised in that region. Corn is the staple food crop. Other products are rubber, coffee, tobacco, cereals, vegetables, sugar cane, yucca, and indigo. Sugar production has showed marked advance in recent years and become one of the chief exports. There is a considerable production of live stock and the mineral resources are rich and varied.

COMMERCE. The total foreign trade for the fiscal year 1919-20 (August-July) amounted to \$19,805,487 as compared with \$12,929,117 for the previous year, an increase of 53 per cent. In 10 years preceding the imports had always exceeded the exports owing to the large importation of machinery and other supplies. The following table gives the trade of the country for the fiscal

years from 1910-11 to 1919-20; the values are in American gold calculated at the rate of 2.6 pesos for \$1 in 1910-11, at 2 pesos for \$1 in 1918-19 and 1919-20, and at 2.5 pesos for the other years:

Years	Imports	Exports	Total Trade	Excess of Imports
1910-11.	\$3,560,939	\$2,908,391	\$6,469,330	\$652,548
1911-12.	4,317,314	3,080,178	7,397,492	1,237,136
1912-13.	5,132,679	3,180,968	8,313,647	1,951,711
1913-14.	6,624,930	3,421,381	10,046,261	3,208,599
1914-15.	5,874,797	3,457,847	9,332,644	2,416,950
1915-16.	4,452,109	4,190,565	8,642,674	261,544
1916-17.	6,293,162	5,353,452	11,646,614	939,710
1917-18.	4,784,449	4,586,931	9,371,380	197,518
1918-19.	6,981,876	5,997,741	12,929,117	933,685
1919-20.	12,860,762	6,944,725	19,805,487	5,916,037

The foregoing statistics, taken from Government sources, are fairly accurate as to imports, but not as to exports, owing to a large clandestine exportation which failed to appear in the records of the custom houses and prices below the actual market were often given in compiling the statistics. The balance of trade was probably considerably less unfavorable than indicated.

The preponderance of the United States as a source of imports appears from the following table of imports by countries, from 1913-14 to 1917-18:

Years	United States	England	France	Germany	Total
1913-14.	\$5,262,043	\$459,763	\$141,598	\$521,837	\$6,624,930
1914-15.	5,177,105	303,000	54,834	95,937	5,874,797
1915-16.	4,085,088	131,796	55,257	365	4,452,109
1916-17.	5,794,765	819,473	61,286	4,660	6,293,162
1917-18.	4,358,472	276,202	25,855	.....	4,784,449

The United States took 86.9 per cent of the exports in 1913-14 and 95.9 in 1919-20.

FINANCE. With the desire to place its finances on a more stable basis, the government, in July, 1920, secured the services of an American economist to draw up a financial programme for the country. Large reductions in government expenditures were secured through his efforts, and during the 1921 session of Congress several laws radically changing the existing financial policy were to be presented. The following are some of the important reforms contemplated: It was proposed to establish a national bank with an authorized capital of \$5,000,000, to be formed if possible by a fusion of the two existing banks; the new bank to be the depository of all government revenues. It was proposed to have a fixed policy with regard to the budget, the authorized expenditures not to exceed \$2,100,000 per year, excluding interest on and amortization of existing and future debts, payments of which are provided for by setting aside each year the sum of \$500,000. The executive was to be authorized to contract a loan not exceeding \$5,000,000 to be used in consolidating and paying existing debts. A commission of public credit was to be created to examine claims against the government and to determine the indebtedness of the country and to have power to make final arrangements with all creditors. No payments of principal or interest on any debts were to be made without the order of this commission. It was proposed to establish a monetary system with a unit of the peso of 100 centavos to contain 0.75233 gram of pure gold. Provision was made for the coinage of silver coins of 1 peso, 50 centavos, and 20 centavos, and minor coins of 10 centavos, 2 centavos, and 1 centavo. The notes of the National Bank

were to be legal tender, redeemed in the legal currency and kept at a par of exchange of 200 per cent with United States gold. The importation of silver coins of Nicaragua, Guatemala, etc., was to be prohibited and their legal-tender quality annulled. A reserve fund of at least 30 per cent of the coins in circulation of the new currency, to be known as the "Gold Standard Reserve," was to be established from the seignorage profits on coinage of the subsidiary currency. Other proposed reforms were revision of the customs tariff, improvement and systematizing of the administration of the customs and internal revenue, a new educational system, and preparation of plans for the development of natural resources, construction of roads, and public utilities.

RAILWAYS. According to the latest available figures in 1920, the railways had a mileage of about 360, the chief line being the National railway running from Puerto Cortez to Potrerillas. By the terms of a contract approved April 7, the National railway of 95 kilometers (1 kilometer = 0.621 mile), was delivered by the government to the Compañía Agrícola de Sula, which granted the government a credit of \$1,000,000 to be used in the complete reconstruction and equipping of the road. The company was

to have charge of the administration until the repayment of the loan. The other four railroads of Honduras were owned and operated by the various fruit companies on the north coast. The Truxillo railroad, eventually to reach Juticalpa in the interior, had about 119 kilometers completed, 28 kilometers having been constructed during 1920. The Tela railroad had about 250 kilometers, 14 of which were laid in 1919-20. The Cuyamel Fruit Company railroad in the department of Cortes had an extension of 80 kilometers, and the Vaccaro Brothers railroad some 204 kilometers.

GOVERNMENT. The executive power is in a president, elected by the popular vote for four years, who acts through a council of five ministers; and the legislative power is in a congress of deputies elected by popular vote. President in 1920, Rafael Lopez Gutierrez, elected in the October, 1919, election for the term 1920-24.

HISTORY. In consequence of reports of an intended revolution in the northern part of the country at the beginning of October, United States warships were stationed near the coast to protect American property. Disturbances were reported at La Ceiba, Oct. 2, and about the same time martial law was declared by President Gutierrez. See GUATEMALA.

HONGKONG. A British crown colony at the mouth of the Canton River off the southeast coast of China at a distance of about 90 miles south of Canton. It consists of an island with an area of about 32 square miles and a strip of land on the mainland with an ear of from 356 to 376 square miles; also of about 4 square miles of the opposite peninsula of Kowloon. The civil population estimated in the middle of 1918 was 561,500, of whom the Chinese numbered 548,000,

Of the white residents, about one-half were British and one-third Portuguese. Its commerce is chiefly with Great Britain, which has about one-half of the trade and whose vessels constitute 32.4 per cent of the ocean-going ships. The imports in 1918 and 1919 by countries, were estimated as follows:

Countries	1918	1919
United Kingdom	\$21,086,390	\$22,571,050
Australia	5,891,884	10,284,177
New Zealand	89,933	26,198
Canada	532,904	1,847,780
India and Ceylon	17,129,735	34,623,292
Burma	587,273	1,705,836
Africa	107,189	27,806
Straits Settlements and Federated Malay States ..	12,904,303	14,604,502
British North Borneo ..	1,428,787	1,160,557
Malta .....	.....	414
Mauritius .....	.....	32,727
Aden .....	.....	708
Egypt .....	.....	83,282
Mesopotamia .....	.....	28,292
China	44,468,687	55,855,872
Japan, Chosen, and Taiwan	46,641,716	42,494,219
Netherlands, East Indies..	6,274,508	13,042,256
French Indo-China	72,624,885	59,651,992
Siam	17,090,257	21,052,992
Philippine Islands	2,586,295	2,725,378
Vladivostok	8,498	37,938,064
United States	89,658,408	78,139,648
Central America .....	.....	4,475
South America	12,179	36,582
France	148,978	667,137
Italy	29,782	76,820
Spain .....	.....	84,181
Portugal .....	.....	15,783
Norway .....	.....	282,586
Sweden .....	.....	67,280
Denmark .....	.....	18,662
Netherlands .....	.....	96,756
Belgium .....	.....	15,140
Switzerland .....	.....	165,576
Europe (other)	198,180	.....
Total	\$289,435,186	\$398,867,515

The exports in 1918-19 by countries were as follows:

Countries	1918	1919
United Kingdom	\$5,288,880	\$11,874,777
Australia	1,722,288	2,030,556
New Zealand	194,482	193,849
Canada	8,141,852	2,120,738
India and Ceylon	10,811,940	14,106,233
Burma	1,595,465	1,617,805
Africa	1,915,772	516,028
Straits Settlements and Federated Malay States ..	14,745,484	41,971,618
British North Borneo ..	475,895	772,087
West Indies	1,256,978	7,585,450
Gibraltar .....	.....	467,161
Mauritius .....	.....	815,207
Egypt .....	.....	1,650,273
Mesopotamia .....	.....	851,569
China	175,804,805	232,874,472
Japan, Chosen, and Taiwan	21,348,876	43,284,578
Dutch East Indies	7,562,989	12,030,812
French Indo-China	27,808,348	38,490,518
Siam	5,852,487	10,234,145
Philippine Islands	7,144,217	6,882,830
Vladivostok	1,116	274,177
United States	25,780,820	21,458,562
Central America	700,462	686,211
South America	4,325,476	1,787,626
Madagascar .....	.....	16,850
France	1,556,956	2,422,814
Italy .....	.....	444,717
Spain .....	.....	29,753
Denmark .....	.....	181,736
Netherlands .....	.....	908,156
Belgium .....	.....	410,529
Switzerland .....	.....	136
Germany .....	.....	8,686
Total	\$318,524,287	\$457,348,909

In 1919, 649,168 vessels with a tonnage of 35,615,169 entered and cleared the port, which

was an increase over the 1918 figures. The estimated revenue figures for 1919 were \$17,056,410; expenditures \$15,078,600; for 1920, revenue was \$15,314,800; expenditure, \$14,886,473. The executive is vested in a governor assisted by an executive council and legislative power in a council over which the governor presides. The governor in 1920 was Sir R. E. Stubbs.

HOOVER, WARREN BREWSTER. Judge, died, March 5. He was born at Perrysburg, N. Y., Nov. 24, 1856, and admitted to the bar in 1879. After practicing at Tacoma, Wash., he practiced at Fredonia, N. Y., 1894-98. Meanwhile, he served as member of Congress, 1891-98. In November, 1899, he was elected Justice of the Supreme Court of New York for the term 1900-13, and in 1902 he was made Judge of the Appellate Division, holding that office till 1908.

HOOVER, HERBERT CLARK. Former Food Controller of the United States, considered during the early part of the year among the candidates for the presidency. He was born near West Branch, Iowa, in August, 1874, and was brought up by relatives in Iowa, India Territory, and Oregon. In the last-named State he became interested in mining through the influence of an old friend in the family. At the age of 14 he ran away from home and entered a real estate office in Portland where he studied in his spare time until he was able to enter the Leland Stanford University in 1891 despite a lack of sufficient training. He pursued his college course under great difficulties being obliged to earn his way and at the same time make up his deficiencies. But he made an excellent record in his studies and at the same time showed capacity in the organization of various student activities. During his college course he became interested in the writings of Georg Bauer, more commonly known as Georg Agricola, the German scholar and metallurgist of the sixteenth century, known as the father of scientific metallurgy, and he made a careful study of Agricola's great work *De Metallica* which dates from about 1556. Later he translated this book with his wife's assistance and it was published in 1912. Meanwhile he graduated in 1895 and for the sake of experience became a common miner in Nevada County, Cal. In the following year he was made assistant-manager of the Carlisle mines in New Mexico, and of the Morning Star mines in California. Then came a call to the position of manager of a mining company in New South Wales. After this work in Australia he became chief engineer of the Chinese Imperial Bureau of Mines (1899) and carried on extensive explorations in the interior of China. During the Boxer Rebellion he was one of the chief organizers of the defense against the siege of Tientsin where he and his wife were staying at the time. After that he acquired an interest in a great coal-mining property near Tientsin and went to London for the purpose of promoting it. In London he became interested in the development of mining and petroleum enterprises and joined as a partner a great firm of London mine operators. This firm met with reverses and finally failed but Mr. Hoover having given assurance that everybody would be paid the last shilling devoted himself to straightening out affairs and after several years of work completely succeeded. This gave him a high reputation in the engineering and mining world and he was called upon to organize and direct a large number of important com-

panies scattered throughout foreign countries. At the outbreak of the war he was in London and when an appeal was made to him to help in aiding the American refugees who were stranded in England and unable to obtain passage home, he threw himself into the work of rescue, advancing from his personal funds half a million dollars, it is said. When the Belgians began to pour into England and the terrible straits of their country were forced upon his attention, he devoted himself to relief of these refugees. The question of feeding Belgium having become acute, associations for relief were organized and Mr. Hoover was appointed chairman of the American Relief Committee in London (1914). The chief difficulty that he encountered was in securing sufficient vessels at a time when the ship market was at the mercy of the competing war governments. After finding cargoes for the first squadron of relief he encountered the flat refusal of the British government to issue clearance papers. Though he explained that the supplies had been bought and were on board the ships it was of no avail and he was even informed that he was fortunate in not being thrown into prison for what he had done. Nevertheless he succeeded in securing papers. This is simply one of the many instances of his energy and skill in surmounting obstacles. Another instance was his success in insuring stable exchange rates between London and Brussels which had been declared beforehand to be impossible. Still another was his success in securing respect for the flag of the Relief Commission on the part of the German forces, one food-ship having been sunk by a submarine and the safety of the whole provision fleet threatened. His dealings with profiteers and obstructionists generally were remarkably vigorous and successful. In 1915 he became chairman of the Commission for Relief in Belgium, where his work drew the attention of the entire civilized world. It had reached a point of complete organization when Mr. Hoover was appointed chairman of the Food Commission of the Council of National Defense in the United States. This office he held from April to August, 1917, and he was then appointed United States Food Administrator Aug. 10, 1917. The main principle of his organization was to give everybody something that he could do. The Food Administration of the United States during the war was in the circumstances remarkably successful and many accounts have been published illustrating the efficiency and resourcefulness of his direction. On the other hand, his policy was criticized on the ground that he laid too much stress on production and too little on the control of prices and the cost of living. There was an extended controversy on this point but it brought out nothing to the discredit of his abilities and fidelity. After the Armistice an entirely different set of problems had to be faced. He sailed at once for Europe and organized in Paris the American Relief Commission drafting experts from the army and other sources in order to meet the needs of the diverse populations. The restoration of means of transport, bridges, etc., was rapidly carried forward, and relief and reconstruction went on in an enormous area. He visited Austria, Poland, Hungary, Bohemia, and other afflicted regions in order to inspect personally the working out of relief measures. The organization of the feeding of children in Belgium and other devastated countries was one

of the principal tasks. In Hungary he carried on relief measures with especial energy with a view to counteracting the revolutionary spirit which in his opinion arose from the chaotic economic conditions. He is said to have been one of the chief instruments in overthrowing the Bolshevik dictatorship of Bela Kun. As to politics, he had been throughout his early career a Republican and he remained a member, while abroad, of a Republican organization in New York. He was reported to have voted for McKinley in 1896 and to have contributed more or less irregularly after that to the Republican campaign funds. In 1918 he appealed in a letter for a united support of President Wilson and when he was sounded with a view to presidential possibilities, he reported that he would support any party committed to a League of Nations against any party that opposed it. At the beginning of 1920 he was a member of the industrial commission which aimed at a settlement of the social, economic, and industrial conditions arising between employers and employees. Besides the translation of Agricola's work above mentioned he wrote *Economics of Mining* (1906); and *Principles of Mining* (1909).

HOPS. Nearly all the principal hop growing countries of the world reported an increased acreage and a larger production in 1920 as compared with area and yield in 1919. In many of the European countries a recovery from the depression suffered by the industry from the war was evident. In England and Wales the production for the year was estimated at about 35,000,000 pounds, or over 10,000,000 pounds above the yield of 1919, less than 1,000,000 pounds below the average production for the 10-year period 1910-19. The importation of hops into Great Britain was retained for the year under governmental control to expedite the recovery of the industry.

The hop area of Germany in 1920 was about 30,000 acres, an increase of 50 per cent over the area of 1919. In Czecho Slovakia on the former Bohemian hop fields the production for 1920 was estimated at 19,841,400 pounds as compared with an average production of 19,420,500 pounds or 431 pounds per acre for the 10 years 1901-10.

According to estimates published by the Department of Agriculture the crop in the United States amounted to 38,918,000 pounds, produced on 29,200 acres or at the rate of 1332.8 pounds per acre. In 1919 the area was 25,000 acres and the total yield 29,346,000 pounds. The farm value of hops on Dec. 1, 1920, was only 36.5 cents per pound, while on the corresponding date the year before it was 77.2 cents. On this basis the total value of the 1920 crop was \$14,194,000 and of the 1919 production \$22,656,000. The production by States in 1920 was estimated as follows: New York, 2,290,000 pounds; Washington, 5,730,000 pounds; Oregon, 9,000,000 pounds; and California, 21,875,000 pounds. The yield in all these States except Oregon was exceptionally heavy, being considerably above the 10-year average. The yield per acre in Washington was estimated at 1910 pounds while in Oregon it was placed at only 900 pounds. The hop consumption by brewers in the United States in 1920 was reported at 6,440,890 pounds, and the exportation at 30,779,500 pounds, the average figures for the ten years 1910-20 being approximately 26,649,500 pounds and 13,805,000 pounds, respectively.

HORSES. See **LIVE STOCK** and **VETERINARY MEDICINE**.

HORTICULTURE. The total production of fruits and vegetables in North America during 1920 was large. It exceeded that of 1919 in all cases except peaches, prunes, and beans. Weather conditions were less favorable in Europe and, combined with other disturbing factors, were responsible for a continued low total production. In Great Britain and Ireland there was a serious shortage of all tree fruits. The Serbian prune crop was fairly large, but was being cured with difficulty on account of the great damage to drying ovens during the war. A large crop of olives was reported from the Mediterranean region. Other crops showed reduced yields, the Smyrna fig crop being very short. Australia produced large crops of fruit during the season of 1919-20.

During the second half of 1920 prices of fresh fruits and vegetables in the United States gradually declined as shipments increased. The canned and dried fruit and vegetable packs were lower than in 1919. This is attributed to many factors, such as an export market overstocked with the 1919 pack, the early high contract prices demanded by growers, and restriction in credit, thereby eliminating speculation by wholesalers and jobbers. Unfavorable weather materially reduced the prune crop in the Northwest. Most of the canned pack and much of the dried pack was put up and contracted for under the high prices prevailing earlier in the year, and was being marketed with difficulty as the year closed. A notable exception is the raisin market, which continued active in spite of high prices, largely, it is generally believed, because of the demand for wine material.

Of the commercial vegetable crops in the United States, 430,458,000 bushels of white potatoes were produced in 1920, as compared with 357,542,000 bushels in 1919; sweet potatoes, 112,368,000 bushels as compared with 105,405,000 bushels; dry beans, 9,075,000 bushels as compared with 11,935,000 bushels; onions, 19,119,500 bushels as compared with 11,397,600 bushels; cabbage, 820,000 tons as compared with 357,025 tons; and canned peas 12,317,000 cases as compared with 8,885,000 cases. The total apple crop was 240,646,000 bushels as compared with 152,238,000 bushels in 1919. The commercial apple crop amounted to 36,272,000 barrels as compared with 26,223,000 barrels; peaches, 43,697,000 bushels as compared with 49,578,000 bushels; pears, 17,279,000 bushels as compared with 15,472,000 bushels, and oranges 27,200,000 boxes as compared with 22,075,000 boxes. California shipped over 35,000 cars of fresh deciduous fruits in 1920, of which 24,000 cars were grapes. The California dried fruit output was estimated at 328,500 tons as compared with 417,250 tons in 1919. Georgia shipped over 7000 cars of peaches in 1920. Hawaii packed 5,071,976 cases of pineapples in 1919, with an estimated pack of 6,000,000 cases for 1920.

EXPORT TRADE. For the fiscal year ended June 30, 1920, the United States exported fruits worth \$115,064,381; vegetables, \$36,517,381; nuts, \$3,261,638 or a total of \$154,843,400 as compared with \$124,435,825 in 1919. The imports for the same period were fruits, \$50,338,696; vegetables, \$46,569,851; nuts, \$74,434,501, a total of \$171,343,048 as compared with \$101,921,962 in 1919. Exports of nursery stock amounted to \$384,809 as compared with \$333,356 in 1919, and imports of nursery stock, \$3,841,161 as compared with

\$2,363,553 in 1919. As in 1919, the export trade, with few exceptions, was marked by increased shipments at higher prices. Exports of dry beans and peas dropped from \$29,383,190 in 1919 to \$10,870,375 in 1920. Exports of dried fruits increased from \$24,745,730 in 1919 to \$45,121,005 in 1920. Of the increased imports, shipments of fruits and table nuts from the Mediterranean region rose from \$14,203,195 in 1919 to \$39,964,152 in 1920. Of the oil-nuts, imports of peanuts increased from \$1,208,224 in 1919 to \$12,381,531 in 1920. China and Japan are now exporting large quantities of peanuts to the United States.

Certain new regulations under the United States Plant Quarantine Act went into effect on August 1st. The new regulations provide that a report shall be made to the Secretary of Agriculture by the captain or other person in charge of a vessel arriving at a United States port and containing on board plants or plant products the entry of which is prohibited or restricted. This report must state the nature and quantity of such plant or plant products, the country or locality of origin, the date of arrival, the date of sailing from the United States port, together with a statement indicating the steps taken to prevent the escape of insects or plant diseases which they may carry. It is further provided that the person in charge of such vessels must allow inspection of his craft and must take such measures as are prescribed by the inspector representing the Department of Agriculture, to prevent the landing of any such plant or plant products or the escape of insects or plant diseases which they may carry. The Collector of Customs, in co-operation with the inspector of the Department of Agriculture, may require such person to destroy the objectionable plants and plant products or to remove them forthwith from the port and the territorial waters of the United States. If necessary, the inspector of the Department may require the disinfection of the vessel in accordance with methods prescribed by the Department of Agriculture. A quarantine prohibiting the importation to the United States of fruit stocks, cuttings, scions, and buds from Asia, Japan, the Philippine Islands, and Oceania became effective June 1, 1920. The Japanese government has established a quarantine against fruits, vegetables, and walnuts from practically all exporting countries. It is said that the discovery of the codling moth in a shipment of apples caused the establishment of this measure. Arizona established a quarantine against citrus fruit from the Gulf Coast States. The quarantine permits the entrance of California citrus fruit subject to inspection for citrus pests.

EXPERIMENTAL WORK. The California Experiment Station recently reported improved methods of storing such perishable fruits as apricots, cherries, and berries. Under present commercial methods these fruits can not be cold stored for any great length of time without losing color and flavor. The station found, however, that if these fruits are held in water or syrup at 8°-12° F. they retain their flavor and color very well for at least a year. They may be stored either as whole or as crushed fruits with equally good results, except that if they are to be used for jelly making the fruit should be stored without being sweetened. Grape juice stored at 8°-12° F. was very much superior to the juice preserved by pasteurization.

Work with fruit juices by the United States Department of Agriculture has shown that fresh grape and apple juices may be satisfactorily clarified with infusorial earth before pasteurization. The resulting products remain perfectly transparent after pasteurization, and retain the characteristic flavor of the untreated juices. This work indicates that the "cooked taste" commonly observed in pasteurized fruit juices is due not so much to loss of flavoring constituents during pasteurization as to caramelization and other changes produced in the suspended colloidal material by heat. The removal of this colloidal material with infusorial earth prior to pasteurization not only does away with the "cooked taste" but also eliminates the long storage period usually required to settle and clarify the fruit juices.

Work with Bartlett pears in the Pacific Coast region has shown that hard-ripe pears can be stored for two months or more at a temperature ranging from 28° to 30° F., and that the fruit will be in good condition at the end of this period. In storage work with grapefruit, at temperatures of 32°, 36°, 40°, and 60° F. it has been found that the acid content and apparently the bitter principle decreases during storage, while the sugar content apparently remains the same at all storage temperatures used. The Satsuma orange, commonly grown in the Gulf Coast region, reaches its highest quality for consumption several weeks before it attains a yellow color, and deteriorates in quality if allowed to remain on the trees. Experiments recently carried out on a fairly large scale in Alabama have shown that by exposing the fruit to an atmosphere of gases formed by the imperfect combustion of kerosene and certain other petroleum products, it will develop a desirable color in four or five days, thereby obviating the need of storage.

Curing and storage investigations with sweet potatoes conducted for several years coöperatively by the United States Department of Agriculture and the South Carolina Experimental Station have given sufficient promising results to warrant the statement that where the potatoes are carefully handled during the harvest and cured in storage house of the design recommended for a period of 10 days to two weeks at a temperature of about 90° with plenty of ventilation, followed by storage in an approved storage house at a temperature of 52° to 56° F. with occasional ventilation, practically all varieties can be kept through the winter with a loss from decay on an average of not to exceed 1 per cent.

Pruning experiments conducted at the New York State College of Agriculture have shown that all types of pruning have a dwarfing effect and tend to reduce fruit production on young trees, primarily because of the reduction in the size of the trees. With species bearing fruit from spurs, the reduction in yield is greater than for species bearing fruit on laterals or one year twigs. Thus far, pruning has not affected the yield through any marked stimulating effect on fruit bud formation or twig growth.

PROMISING FRUITS AND PLANTS. Investigations now being conducted by the United States Department of Agriculture in cooperation with the Alabama Experiment Station indicate that the citrangequat (a citrange-kumquat hybrid) is apparently fully as immune to citrus canker as the kumquat and makes a good stock for the Satsuma and other citrus varieties. Severinia,

a small woody plant distantly related to the orange, has proved to be entirely immune to canker and offers considerable promise as a citrus stock and as a hedge plant to replace the susceptible trifoliolate orange. The canker resistance also of certain forms of the Siamese pummelo seems quite well established. Two of these pummelos are of excellent quality and good appearance while being normally seedless. Authentic bud wood of the best Siamese varieties has been secured to permit further testing under American conditions.

Among the numerous citrus hybrids developed by the Department is the Eustis limequat. It originated from a cross between the common lime and the kumquat and gives promise of achieving considerable economic importance as a hardy lime for the Gulf Coast region. The fig insect, *Blastophaga*, necessary to the pollination of Smyrna figs has now been successfully colonized in southern Georgia for three years, and a small distribution of caprifigs containing these insects from Brunswick, Ga., led to the maturing of Smyrna figs at five different places in five of the Southeastern States. The Smyrna trees thus made productive were old seedling trees that had never previously matured a crop.

MISCELLANEOUS. The English Chamber of Horticulture, London, has successfully organized a strong influential Parliamentary Committee to guard and watch over all horticultural interests in general, and to keep before the authorities just claims of those engaged in various branches of horticulture. The California Nurseryman's Bud Selection Association has been organized with the view of determining and ultimately propagating from selected buds of various fruits and plants.

France employed a large force of skilled gardeners under the direction of Europe's foremost landscape artists beautifying the Argonne Cemetery, where 23,000 American war heroes lie. It is the desire of the French government to make this spot one of the most beautiful in France. The death was announced of Reginald Farrar, the well-known plant collector and writer, October 16, age 40 years.

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HOSKINS, FRANKLIN EVANS. Missionary,

died in Syria, November 12. During the war he had worked among Allied prisoners and suffered a break-down in health. He was born at Rochdale, Pa., Sept. 20, 1858; graduated from Princeton in 1883; and was ordained to the Presbyterian ministry in 1888. He had been several years engaged in foreign missions before his ordination. From 1888 to 1900 he was on missionary and exploration journeys in the Near East and after 1900 he was editor of the *American Mission Press*. He was prominent in many missionary and other religious associations and wrote a number of books of travel, besides contributing largely to magazines on religious, geographical, and other subjects. Among his books may be mentioned, *From the Nile to the Nebo* (1912), and in collaboration with Prof. William Libbey, *The Jordan Valley and Petra*.

HOUGHTON, LOUISE SKYMOUR. Author, died, August 22. She was born in Piermont, N. Y., Nov. 22, 1838, and educated at the Utica Female Seminary. After several years abroad she became a volunteer in McAll's mission in France and editor of its periodical in 1889. She was one of the founders of the King's Daughters' Settlement in New York City. In 1882-1902 she edited *Evangelist* and was associate editor of *Christian Work*, 1902-04; wrote a number of popular books in relation to the Bible and translated many works from the French. She also published selections from the Bible with commentaries. Among her latest books may be mentioned: *The Silent Highway* (1901); *Telling Bible Stories* (1905); *Hebrew Life and Thought* (1906); *Our Debt to the Red Man* (1918); *The Idealism of the French People* (1918).

HOURS OF LABOR. See LABOR LEGISLATION.

HOUSING. Although the housing situation was very acute at the beginning of 1920, during the summer and fall some improvement of conditions was obtained and at the close of the year the crisis was believed to be past. Profiteering on rents aroused much public dissatisfaction during the year, and led to State legislation, especially in the Eastern States, in respect to the limits of a landlord's rights in dispossession proceedings. The landlords objected strenuously, saying if the law allowed tenants to stay irrespective of the landlord's wishes in the matter the law was unconstitutional as being an interference with their "inalienable rights as citizens of the United States." In New York City for instance, a landlord and owner of property might recover his property unless his sole purpose in requiring the repossession of that property was to enable him to get it so as to take advantage of the housing shortage by imposing unfair terms through duress upon his tenants. If he wanted to live there, he could recover it; if his tenant was objectionable, he could recover it; if he wanted to tear it down and demolish it to build again, he could recover it. The above is the general spirit with which laws have been formed for the relief of the housing situation. According to the old law, a landlord could dispossess after five days, leaving the tenants to argue about it afterwards. Statistics gathered in 1920 showed that 13 to 14 per cent gross was the minimum economic return from any rented property.

During 1920 the housing situation took on two general tendencies. One was legislation, mainly on the part of municipalities, preventing profit-

teering on the part of landlords, and the dispossessing of tenants already paying a fair rent. Although this legislation did not work out as well as was intended, because the law was unable to say exactly what constituted a fair rent, it alleviated extreme causes of overcharging. The legislation took the form of forbidding more than a certain percentage of increase during a certain period.

The second trend was the formation of housing corporations in cities and in some States. Included in this work is the investigation of conditions, the procuring of building materials for sale at moderate prices, and the loaning of money on mortgage to persons wishing to own their own home. This procuring of funds was difficult, and in some cities it was found necessary to use municipal funds. Money was loaned to a 50 per cent value of the improved property, usually with a maximum of \$5000 and a minimum of \$2000. Statistics showed that not more than 10 per cent of the required number of homes needed were being built, normal requirements being about 450,000 in the United States each year. There were built in 1919 but 70,000 and there were over 1,000,000 marriages. Statistics from the National Banks showed that loans on real estate fell far short of the limit allowed by law, and that a large part of the loans made were for agricultural purposes and not for buildings and dwellings. Most of the loans made were in the Middle West and the Southwest.

Efforts were made during the year to arouse public sentiment in favor of garden cities and garden suburbs, built on plans similar to those used in England. The plan is as follows: 6000 acres of land, 1000 of which shall be used for building homes, and the remainder to be used in roadways, gardens, parks, etc.; a belt line railroad shall surround the city and factories shall be built close to it; beyond the factories shall be an agricultural district which shall supply the city with the food that it needs. This plan has been used in England with great success. Effort would be made to keep the city from becoming too regular in its architecture, or too severe in its lines, but rather to impart some of the "home" atmosphere of the ordinary small town.

In 1918 it cost but \$3000 to build a workingman's house, while in 1920 it cost between \$6000 and \$8000. For the most part workingmen's dwellings at \$6000 were beyond the purchasing power of the workingman; for, he would have to pay a rent of \$60 a month, or the equivalent of it, for such a house. Thirty dollars was about what he expected and was able to pay. The only solution seemed to lie in the standardization of houses, so that parts and fittings could be turned out on a large scale. It is interesting to note that in Cleveland there was a 50 per cent increase in the number of illegitimate births during the first six months of 1920, and that the Health Commissioner credited this to the lack of housing facilities and the consequent promiscuity of living.

The United States Housing Corporation is an organization to provide houses for workmen engaged in war work, and had an appropriation of \$100,000,000. On Dec. 16, 1919, the report of a committee investigating this corporation was presented in Congress, and the corporation was severely criticized for its lack of speed in attaining results after it was once organized.

LEGISLATION. An important step looking toward the solution of the housing problem presented by the acute, nation-wide shortage was taken by the Senate on April 17th when it passed a resolution introduced by Senator Calder of New York providing for the appointment of a Senate Committee to investigate the situation and report upon it by December.

Approximately 120 rent bills were introduced into the Legislature of the State of New York during one session, of which 12 became law. These laws did nothing to relieve the housing problem, but bore on landlords, profiteering, and how soon and for what reasons a tenant may be turned out by the landlord. As these laws were passed an enormous number of cases were carried into court, and the tenants scored an overwhelming majority. The law says that a landlord may not increase his rent more than 25 per cent of the rent charged the year before.

The rent profiteering situation and housing shortage resulted in various movements for State housing, but progress in this field seemed destined to be slow not only because of lack of precedent, but because of constitutional difficulties. In only one State was State housing undertaken, namely, Massachusetts, but only after a Constitutional amendment made it possible. Proposals for State housing were made during the spring legislative sessions in New York, New Jersey, and Minnesota.

The Eighth National Conference of the National Housing Association was held at Bridgeport on Dec. 9-11, 1920, where the subject was discussed in many phases. Many noted specialists on the different features of the housing problem were present and spoke to the conference. The Association publishes the quarterly magazine, *Housing Betterment*, which gives news of the developments of the problem in all parts of the world. Further information may be obtained from the Association, whose headquarters are at 105 E. 22d Street, New York City, and whose secretary is Lawrence Veiller.

FOREIGN. A meeting of the Inter-Allied Housing and Town Planning Congress was held in London on June 3-11, 1920. The delegates heard many discussions of the problem, and were shown some of the results of the efforts in England to alleviate the situation.

GREAT BRITAIN. The Housing Bill of July 31, 1919, makes it incumbent upon the local authorities to prepare and carry out housing schemes. Because of the war 350,000 working houses were not built during that five years, and 20,000 now standing are not fit for use. Under the Act mentioned above, the central government is to pay deficits where they occur to the municipal building. A new Rent Act was passed on July 1, 1920, providing that a landlord may increase his rent 8 per cent for improvements or structural alterations, besides 5 per cent the first year, 10 per cent the second year, and where the landlord is responsible for repairs another 25 per cent may be added. Further provisions deal with dispossession of a tenant.

England in 1920 was proposing to build 500,000 houses for her people, at an estimated cost to the taxpayers of Great Britain of over \$100,000,000 loss every year for a period of 60 years. The capital needed was placed at over £517,000,000, and was to be raised by a bond issue at 6 per cent by the local authorities.

NORWAY. Much progress was reported in this

country during the year. Several of the municipalities went in very heavily for the buying of land, and rather heavily for house building. For instance in Christiania, a city of 260,000 inhabitants, 2500 houses were built during the three years ending 1919 at a cost of \$12,500,000 or \$5 per inhabitant, and the building of at least 1000 more new houses annually was planned for years to come.

BELGIUM. This country lost 150,000 dwellings during the war, and in 1920 only 4000 had been erected in the devastated regions. In order to promote house building Belgium allocated 100,000,000 francs for use in 1920 in grants at the rate of 2 per cent; no loan to exceed half the cost of the building, to a maximum of 6000 francs, and no building so built to be rented at a rent above 4 per cent of the total cost.

ITALY. Housing conditions in Italy were reported as being very acute. It was estimated that one-third of the population of Rome was without permanent homes. The government appropriated 92,000,000 lire to be loaned directly to the various semi-official organizations actually engaged in construction. Provisions were made for erection of two new garden suburbs outside the present limits of the city.

CZECHO-SLOVAKIA. Shortage of dwellings in Prague and other large cities of this republic forced the government to take steps toward relieving the situation by enacting a law providing for the compulsory letting of all rooms not absolutely required for the owners of the houses in which they are found. Two rooms for each family head and one additional room for each adult member of the family are allowed, and all other rooms must be rented.

GERMANY. The rent laws in Berlin have been found ineffective. Means were found of side-stepping the law, and in a great many cases it is simply not enforced. On March 11, 1920, the Department of Labor came out with a series of regulations forbidding under penalty of fines up to 10,000 marks the offering of any premiums for the locating of vacant rooms, the offering of rooms under vague addresses, the asking of bids for rooms, and the offering of rooms in connection with the purchase of furniture.

CANADA. Much progress was reported from the Dominion, although there, too, as in the United States, the question of financing has been a difficult one. There was \$27,000,000 made available by the government to be borrowed by the local authorities for building purposes. Ninety-nine municipalities passed by-laws under the act and appointed commissions, of which number 68 constructed houses. Money is lent at 50 per cent of the value for 20 years at 5 per cent.

AUSTRALIA. This country, too, has introduced a housing scheme for its workmen and returned soldiers similar to that in Canada. For additional information, see BUILDING; CITY PLANNING; ARCHITECTURE; and WELFARE WORK.

HOWARD, THOMAS BENTON. Rear Admiral in the United States Navy (retired), died at Annapolis, Md., November 9. He was born at Galena, Ill., Aug. 10, 1854; graduated at the Naval Academy in 1873; served as navigator on the *Concord* in Manila Bay, May 1-Aug. 19, 1898 and on the *Charleston* and *Monadnock*, 1899-1900; commanded in succession several battle-ships; took part in the cruise around the world, 1908-9; commanded the Fourth Division of the Atlantic Fleet, 1910-1912; and was president of

the National Examining and Retiring Board, 1912-13 and again in 1915-16, when he was retired. He was called again into active service as superintendent of the United States Naval Observatory in April, 1917. From November, 1914 to September, 1915, he was Commander-in-Chief of the Pacific Fleet.

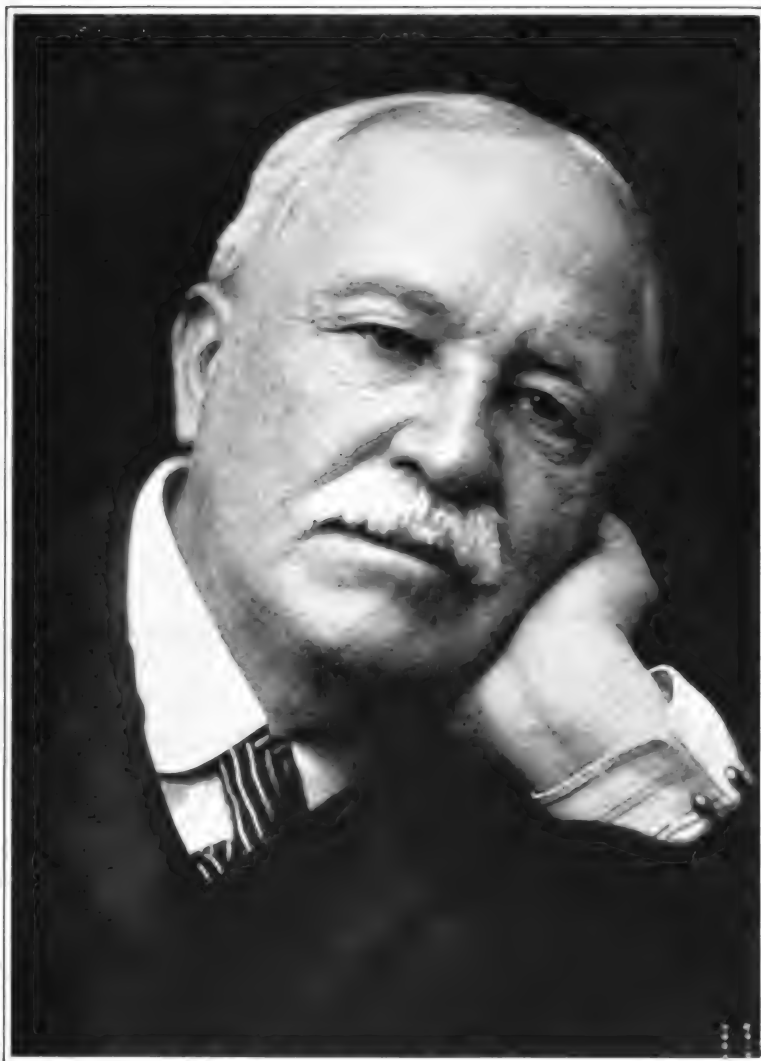
HOWELLS, WILLIAM DEAN. Leading American novelist, died in New York City, April 11, 1920. For many years preceding his death he was in the first rank of American writers and after the death of Henry James was generally considered the chief American novelist and frequently termed the "Dean of American Letters." He was born at Martin's Ferry, Ohio, March 1, 1837, of Welsh Quaker ancestry. His father was a country newspaper-man, working first as compositor on the local journals of the State and afterwards as correspondent and editor. Young Howells had no college education but grew up among books and in the atmosphere of journalism. He showed literary talent at an early age, and some of his youthful poems were published in the *Atlantic Monthly*. In 1860 he published along with John J. Piatt a book of poems called *The Two Friends* and in the same year wrote a *Life of Lincoln*. As a reward for the latter he was appointed consul to Venice where he remained from 1861 to 1865. From 1866 to 1881 he was engaged on the *Atlantic Monthly*, of which he was editor after 1872. Meanwhile he had published his *Italian Journeys* (1867), reminiscent of his experiences at Venice; *Their Wedding Journey* (1871), his first novel; *A Chance Acquaintance* (1872); *A Foregone Conclusion* (1875); *A Counterfeit Presentment* (1877); *The Lady of the Aroostook* (1879); *The Undiscovered Country* (1880); *A Fearful Responsibility* (1881); and *Dr. Breen's Practice* (1881). These works and many of his later ones show the effects of his life in Boston and New England. In 1886 he joined the staff of *Harpers Magazine* where he carried on the department known as the "Editor's Study." He left the House of Harper subsequently but returned in 1901 and conducted the department known as the "Editor's Easy-chair," from that time until his death. The list of his novels and other writings is too long to give here in full but the following may be mentioned: *A Modern Instance* (1882); *A Woman's Reason* (1883); *Three Villages* (1884); *The Rise of Silas Lapham* (1885); *The Minister's Charge* (1886); *Indian Summer* (1886); *April Hopes* (1888); *Annie Kilburn* (1889); *A Hazard of New Fortunes* (1890); *The Coast of Bohemia* (1893); *Their Silver Wedding Journey* (1899); *The Kentons* (1902); *Son of Royal Langbrith* (1904); *Miss Bellard's Inspiration* (1905); *A Fantasy* (1914). Besides the above novels he wrote a number of witty and entertaining farces including *The Sleeping Car*, *The Elevator*, *The Mouse-Trap*, and *Out of the Question*; many essays and criticisms, impressions of writers, reminiscences, and books of travel, including *Modern Italian Poets* (1887); *Criticism and Fiction* (1891); *Impressions and Experiences* (1896); *Literary Friends and Acquaintances* (1900); *My Mark Twain: Reminiscences* (1910); *Tuscan Cities* (1885); *A Boy's Town* (1890); *London Films* (1905); *Familiar Spanish Travels* (1913).

In *A Traveler from Altruria* (1894) he showed his growing tendency toward socialistic ideas and cast in the form of fiction a criticism of

modern society. His work as a literary and social critic though of a high class and admirable as regards the manner of presentation had not the same value as his novels, which for nearly two generations held the foremost place among American works of fiction. He was the leading realist in American letters, having from the first imbibed the spirit of the best French realists and the great Russians. An admirer of Balzac and the masters of French fiction since that day, he had little sympathy with the romantic writers and was profoundly hostile to the conventional romance of his own time, whose unreality and pretentiousness he delighted in satirizing. He was long an intimate of Henry James with whom he carried on an extensive correspondence containing letters of great interest some of which appeared in the volumes of James's *Letters* published in 1920. More than any other writer of his time he gave a minute and varied picture of American life, and like James, he served as an interpreter of American social conditions to Europe, and of the European point of view to America. Unlike James, however, he never felt the lack of sufficient literary incentive in his own country, despite James's frequent complaint that he was wasting his time in the portrayal of crude and elementary conditions when the whole rich and complex field of European life was open to him. Of all his novels the most popular seems to have been *The Rise of Silas Lapham*, but his admirers prefer a number of his more subtle and complex works in the later period, of which *A Hazard of New Fortunes* is a good example; *The Kentons* is also an admirable example of his mature work. No man in American letters was more beloved by fellow members of the craft. A singularly kindly spirit pervaded all he did and said and he was remarkable for his power of discerning promise in new writers. Indeed, he was blamed somewhat for going too far in his praises and encouraging young writers who had no other merit than an earnest desire to cultivate the same realistic field of fiction that Howells had taken for his own. When the National Institute of Arts and Letters was founded he was chosen one of the first seven members of the American Academy and became its president, which office he held to the time of his death.

HUGHES, MATTHEW SIMPSON. Bishop, died, April 4. He was born in Doddridge, Co., Va., Feb. 2, 1863; studied at the University of West Virginia and was ordained to the Methodist ministry in 1887. He held pastorates in Maine, Minnesota, Missouri, and California. He was professor of practical theology in the University of Southern California, 1908-1911, and he was elected bishop of the Methodist Episcopal Church in 1916. He wrote the *Higher Ritualism* (1906) and *The Logic of Prohibition* (1915).

HUNGARY. A republic in eastern Europe, formerly a kingdom which along with Austria, made up the Dual Monarchy of Austria-Hungary. Capital, Budapest. The area of the old kingdom was 125,609 square miles and its population, Dec. 31, 1910, was 20,886,487. In 1920 the area and population were not definitely known because the boundaries of the new state had not been determined. Under the terms of the Treaty (see below under *History* and also *WAR OF THE NATIONS*), the new state would be about one-half the size of the old kingdom. Out of the former parts of Hungary, Croatia and Slavonia were absorbed in the new state of Jugo-Slavia, Slo-



WILLIAM DEAN HOWELLS

1837-1920

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vakia in Czecho-Slovakia and Transylvania in Rumania.

The republic was proclaimed Nov. 16, 1918 under the title of the Hungarian People's Republic and Count Michael Karolyi was appointed provisional president. His government fell from power March 12, 1919 and was succeeded by a Soviet government which declared the dictatorship of the proletariat. Opposition to it arose and soon succeeded only with the assistance of the Rumanian army in overthrowing it. On Aug. 7, 1919, a new government was organized, representing the parties of the Right, and elections were held in January and February, 1920. The new parliament chose a regent styled "Protector" of the Magyar Republic." Regent in 1920, elected March 1, Admiral Nicholas von Horthy; Prime Minister (appointed March 14) Dr. Alex. Simonyi-Semadam. The official style of the ministry was "Royal Hungarian Ministry," the cabinet having voted, March 23, that Hungary should be described as a monarchy.

ELECTIONS. The elections of January 25th gave a large majority to the parties of the Right. The distribution of seats according to the party groups was as follows: Small Land Owners, 71; and Christian National Union, 68, both these groups belonging to the Right; National Democrats, 6; Christian Socialists, 5; Christian Social Economic party, 4; United Christian National Small Land Owners, 3; Christian Small Land Owners, 4; miscellaneous, 3. The assembly began its session February 16 and elected M. Rakovsky as its presiding officer. At the beginning of March the election of Admiral Nicholas Horthy as vice-regent by the National Assembly was announced. This was followed by the resignation of the Huszar Ministry, March 10. A new ministry was appointed under a Christian Nationalist, M. Simonyi-Semadam, a friend of the former prime minister. The programme as announced by the new ministry included among its features various measures of agrarian, economic, and financial reform.

THE REACTION. Reactionary movements were reported from time to time during the year especially those due to the activity of the so-called "Society of Awakening Hungarians" and of army officers. The land question offered much difficulty on account of the opposition of the aristocratic landed proprietors. Demonstrations against the Jews occurred at intervals through the year. Discontent showed itself in Parliament and on June 10th led to the overthrow in turn of the ministry that had been established in February.

The government of Hungary was repeatedly referred to in the Liberal press as the most reactionary in Europe. It met with sharp attacks from the Socialists on all sides and at one time this element in Hungary itself and in Austria attempted a boycott of the existing régime. The government was believed to be hostile to the neighboring states. The fear of this hostility was attributed to the so-called Little Entente concluded by Rumania, Jugo-Slavia and Czecho-Slovakia, which states were thought to apprehend an attempt on the part of the Hungarian government to recover territory ceded to them under the treaties. Charges were repeatedly made against the so-called "White" government in Hungary under Admiral Horthy. It was alleged in the autumn that a former officer of the Austro-Hungarian army had as a spy succeeded in pene-

trating the army and had acquired a mass of evidence against the "White" leaders, proving that there had been a plot against the former prime minister, Friedrich, and that a robbery upon an enormous scale had been committed by the reactionaries. At this time there was an outbreak of the anti-semitic society known as the Society of Awakening Hungarians at their convention at Budapest, September 15, urging the immediate necessity of expelling all the Jews from state, military, academic and journalistic positions. Some demanded the expulsion of all Jews from Hungary. The society agitated for the overthrow of the government but its plans were discovered and measures taken for its dissolution. There were many anti-semitic outbreaks at Budapest and hundreds of casualties were reported. The police force threatened to strike unless the government took measures against the terrorists.

SENTENCE OF THE COMMUNISTS. The trial of the ten people's commissaries under Bela Kun concluded on December 28, after sitting nearly six months, with a judgment finding all guilty of sedition and murder and the sentence of four to death and the rest to imprisonment for life. Protests against the severity of the sentence were offered by leading liberals and moderates in many countries. The Soviet government informed the Hungarian government that it would treat a number of prominent Hungarian officials in Russia, including Counts Karolyi and Szechenyi, in exactly the same manner as the Communist commissaries were treated by the Hungarians.

MURDERERS OF COUNT TISZA. The murderers of Count Tisza had been on trial before a military court which rendered its decision in October. It condemned to death two of the accused and sentenced a third to fifteen years imprisonment. It was announced that proceedings would be taken against those who had instigated the crime.

FINANCIAL DIFFICULTIES. In October the finance minister submitted the budget for 1920-21 to the National Assembly which was as follows: ordinary revenue, 8,809,000,000 kronen; extraordinary revenue, 1,744,000,000 kronen; ordinary expenditures, 8,434,000,000 kronen; extraordinary, 10,773,000,000 kronen. In addition to this was an item of expense under the title of "investments," amounting to 1,300,000,000 kronen. Thus a deficit existed of 10,000,000,000. The condition was regarded as one of virtual bankruptcy.

THE HUNGARIAN TREATY. The ratification of the treaty at Budapest occurred on November 23. At a preliminary conference the session for the signature was termed the "session for the burial of old Hungary" and it was resolved that a protest against a dictated peace should be sent to all the Powers. Meanwhile the government had received a note from the Council of Ambassadors, saying that certain measures had been taken to insure in neighboring countries the protection of Magyar minorities and promising that the allied commission would begin the work of delimiting the Hungarian frontiers as soon as peace was ratified. See WAR OF THE NATIONS.

WEST HUNGARY. This division of Hungary was ceded by the treaty with Austria to Austria, but the Hungarians did not accept the decision. A strong feeling of nationality prevailed in the region and toward the close of the year a movement gathered force for holding the region. Troops were concentrated in the vicinity, accord-

ing to reports at the close of the year, and the territory was said to have been provided with a system of trenches and thoroughly organized for defense. The Hungarian nationalist troops were commanded by Colonel Lehar, brother of the composer and were said to be well supplied with munitions. This action had been hastened by the recent decision of the Council of Ambassadors, that West Hungary should be turned over to the Allies, who would set up an international commission to provide for its transfer to Austria.

MONARCHIST MOVEMENT. At the close of the year there was a strong element that desired and expected the return of the monarchy, and it was believed in certain quarters that Admiral Horthy was soon to retire in favor of a royal candidate. There were many signs in Hungary of fidelity to the monarchy and the Constituent Assembly had even declared that Hungary was still a kingdom but that the king was temporarily absent. The question of candidates was much discussed. The people were manifestly glad to be delivered from Austrian rule and did not look with favor on any aspirant to the throne who implied the possible revival of the Austrian control. There was opposition to King Charles on this account and especially because he was accused as Emperor of Austria-Hungary of having made separate overtures of peace without the knowledge of Germany in 1917 and because his queen, Zita, was supposed to be too sympathetic with the Allies. They accused him also of having abandoned Hungary after the armistice without making any effort on her behalf and finally of sacrificing too readily the principle of legitimacy. Some favored his son, believing that Charles could be induced to abdicate on his behalf, but the objection to this was that it would involve a long regency. The most popular candidate among the monarchists at the close of the year seemed to be the Archduke Joseph, familiarly known as *Father Joseph*, who, though a Hapsburg, was particularly sympathetic to the Hungarians. His father had been the representative of the king at Budapest and Joseph was born in Hungary and had passed all his life there, rarely going to Vienna. He was about fifty years old and during the war had served with distinguished bravery. Against him it was urged by the legitimists that he had betrayed the royal cause in taking his oath to the new republic after the armistice. To this he replied that King Charles himself had authorized him to do so. Under the Communist régime of Bela Kun, he had remained in Hungary and had been obliged to work along with his family like common peasants on his own estates. It was said that the Bela Kun government had resolved upon the execution of himself and his family and that they were only saved from death by the fall of the Communist government.

HUNTINGTON, ALFRED KIRBY. British metallurgist, died, April 16. At the time of his death he was professor of metallurgy at King's College, University of London, having been appointed to the chair in 1879. After the discoveries of the Wright brothers in America, he interested himself in aeronautics and made experiments in flying in machines of his own devising. During the war he gave valuable service in connection with the high explosives.

HUSON, THOMAS. British chemist and engraver, died, February 6. He was born at Liver-

pool, England, January, 1844, and practiced there as an analytical chemist and at the same time applied himself to painting and engraving. He wrote a number of works on art subjects, including *Six Landscape Mezzotints* (1880); *Round About Helvellyn* (1885); *Photoaquatint and Photogravure* (1897). He executed many etchings and engravings.

HUTCHINS, CHARLES THOMAS. Rear-admiral of the United States Navy, died, August 9. He was born at Kingston, Pa., Feb. 5, 1844; graduated at the Naval Academy, 1866; and was made a lieutenant-commander in 1887 and commander in 1896. He was on the *Wyoming* as navigator in the expedition to Santiago (Cuba), to retake the *Virginius*. He was navigator on board the *Lancaster* at the bombardment to Alexandria, Egypt. On this occasion he was in command of the landing party from the fleet and subsequently received the thanks of the King of Sweden. From 1893 to 1900 he was in command of several vessels and he was afterwards engaged as commanding officer of the *Buffalo* in carrying recruits to China. In 1902-04 he was the Naval Secretary of the Lighthouse Board and in 1904-05 was in command of the new battleship *Maine*. Meanwhile he had been raised to the rank of captain, 1904; on June 30, 1905, he was raised to the rank of rear-admiral and retired.

HYATT, JOHN WESLEY. Inventor, died, May 10. He was born at Starkey, N. Y., 1837, and while still a boy made several inventions. His first important one (1865) was a billiard ball made out of composite material as a substitute for ivory. In 1870 he discovered the means of dissolving pyroxalyn under pressure and later invented a "celluloid." His discoveries in this field led to the foundation of the great celluloid industry. More important than this was the discovery of the means of purifying large bodies of water (1881). His method was soon followed extensively and finally became in general use both in the United States and abroad. In 1900 he made important inventions in connection with the sewing-machine, and later he invented a machine for sugar extraction and a new method of solidifying hard woods, used for the making of bowling balls, heads of mallets, etc.

HYSLOP, JAMES HERVEY. Psychologist, died, June 17. In the latter part of his life he was prominently before the public in discussions of Spiritualism in which he defended the authenticity of communications with persons after death. He was born at Xenia, Ohio, Aug. 8, 1854; graduated at the University of Wooster, Ohio, 1887; studied at the University of Leipsic, 1882-4, and became a professor in American colleges. After teaching at Lake Forest University, Smith College, and Bucknell University, he became professor of philosophy, ethics, and psychology in Columbia University in 1899 and held the chair of logic and ethics, 1895-1902. He was an organizer of the American Institute for Psychical Research and was its secretary after 1903, editing its journal and proceedings. Among his writings may be mentioned: *Elements of Logic* (1892); *Elements of Ethics* (1895); *Logic and Organization* (1899); *Problems of Philosophy* (1905); *Science and a Future Life* (1905); *Enigmas of Psychical Research* (1906); *Psychical Research and the Resurrection* (1908); *Psychical Research and Survival* (1913); *Life After Death* (1918); and *Contact with the Other World* (1919).

ICELAND. A Danish crown colony with an area of 40,456 square miles of which 16,245 are inhabited, and with a population estimated in 1919 at 92,700. In 1916-17 the number of pupils in the elementary schools was 6920. There is a university in Reykjavik with faculties of theology, jurisprudence, medicine, and philosophy. The national church, which is endowed by the state, is the Evangelical Lutheran. In 1918 the total hay crop was about 2,300,000 cwt.; the crop of potatoes 52,000 cwt.; and of turnips 20,000 cwt. The total value of the fisheries in 1917 was placed at 18,300,000 kronur. The budgets for 1920 gave a total revenue of 5,420,300 kronur and the expenditure at 5,182,537 kronur. The executive power is in a ministry representing the king and the legislative power is in a parliament of two houses. The president of the council appointed February 25, 1920 was Jon Magnusson.

IDAHO. POPULATION. According to the preliminary report of the census of 1920, there were 431,866 residents in the State, January 1, 1920, as compared with 325,594 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 42,100, an increase of 36.7 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	45,000	1,800,000	\$1,800,000
	1919	35,000	1,225,000	2,021,000
Oats	1920	200,000	8,000,000	5,440,000
	1919	210,000	7,350,000	7,203,000
Barley	1920	112,000	4,256,000	3,192,000
	1919	110,000	3,300,000	4,620,000
Wheat	1920	1,050,000	23,600,000	29,500,000
	1919	1,050,000	19,075,000	39,104,000
Clover Seed	1920	16,000	88,000	990,000
	1919	13,000	78,000	1,981,000
Rye	1920	18,000	252,000	252,000
	1919	13,000	182,000	318,000
Hay	1920	875,000	2,400,000	29,745,000
	1919	820,000	1,870,000	40,960,000
Potatoes	1920	41,000	7,880,000	5,018,000
	1919	39,000	6,045,000	9,128,000

^c Tons.

MINERAL PRODUCTION. The value of the gold, silver, copper, lead, and zinc mined in Idaho in 1920, according to the estimates of the United States Geological Survey, was about \$32,144,000, an increase of \$13,770,000 from that in 1919. The shipments of ore and concentrate showed a marked increase over those in 1919, when the Cœur d'Alene district suffered on account of a labor strike. Though the output of gold and copper decreased, the output of silver, lead, and zinc increased greatly. Production was not normal, but the large mines were active, and the prices for lead and zinc were somewhat higher. The mine output of gold in Idaho in 1920, was valued at about \$469,000, a large decrease from that in 1919, which was valued at \$713,238. The mine output of silver increased from 5,579,056 ounces in 1919 to about 7,545,000 ounces in 1920, or more than 35 per cent, and the value increased from \$6,248,543 to about \$8,227,000. The mine output of copper decreased from 3,122,763 pounds in 1919 to about 2,203,000 pounds in 1920. The value of the output decreased from \$580,834 to about \$377,000. The mine output of lead, which is the most abundant metal in Idaho, increased from 182,341,898 pounds in 1919 to about 254,662,000 pounds in 1920. The average price of lead was higher, and the value

of the output increased from \$9,664,121 to about \$20,777,000. Though the total production showed a great improvement over that of 1919, the mines had not generally returned to a normal output.

The mine output of recoverable zinc in Idaho increased from 15,094,229 pounds in 1919 to about 28,309,000 pounds in 1920. The price of zinc was higher.

FINANCE. The budget according to the figures published in 1920 was \$4,737,739 and the net debt \$3,880,750.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican) 88,975; Cox (Democrat) 46,579; Debs (Socialist) 38; Prohibitionist 32; as compared with the following vote for president in 1916: Wilson (Democrat) 70,054; Hughes (Republican) 55,368; Benson, (Socialist) 8066. The vote for United States Senator, in 1920 was: Frank R. Gooding (Republican) 75,985; John F. Nugent (Democrat) 64,513. The vote for governor was: D. W. Davis, (Republican) 75,748; T. A. Walters (Democrat) 338,509; S. D. Fairchild (Independent) 28,752. There were popular majorities on the special question whether a bond issue of \$2,000,000 should be authorized for the making of State highways and on the following constitutional amendments: Increasing the membership of the supreme court from three to five justices; giving the supreme court jurisdiction of appeals from orders of the Public Utilities Commission; and providing as an exception to the rule that State credit should not be bestowed upon private individuals or corporations that the State itself might control and promote the development of the unused water power within its borders.

CHARITIES AND CORRECTIONS. The following is a list of institutions under State control: Penitentiary, Boise; Soldiers' Home, Boise; Insane Asylum, Blackfoot; Northern Idaho Sanitarium, Orfino; Idaho State Sanitarium, Nampa; State School for the Deaf and Blind, Gooding.

OFFICERS. Governor, D. W. Davis; Lieutenant-Governor, C. C. Moore; Secretary of State, Robert O. Jones; Auditor, Edward G. Gallet; Treasurer, D. F. Banks; Attorney-General, Roy L. Black; Superintendent of Public Instruction, Ethel E. Redfield; Inspector of Mines, Stewart Campbell.

JUDICIARY. Supreme Court: Chief Justice, John C. Rice; Associate Justices: Alfred Budge, Charles C. McCarthy, Robert N. Dunn, and William A. Lee.

IDAHO, UNIVERSITY OF. A State institution of the higher education at Moscow, Idaho, founded in 1889. There were 141 students enrolled in the summer school and for the regular session there were 1099. The faculty numbered 101, six new members having been added during the year. The income for the year, arising mainly from State appropriations, was \$472,528. There were 50,000 volumes in the library. The establishment of the School of Education was the most important change in the university during the year. The south wing of the administration building, with the exception of the library portion was completed. President, Alfred Horatio Upham, Ph.D., having been elected to succeed Chancellor E. H. Lindley, who was president until August 15.

IDDINGS, JOSEPH PAXON. Geologist, died Sept. 8. He was born at Baltimore, Md., Jan. 21, 1857; graduated at the Sheffield Scientific School, and after graduate studies in this country and in Germany, became assistant geol-

ogist in 1880 in the United States Geological Survey. He was geologist in the Survey from 1888 to 1892 and again after 1895. From 1892 to 1908 he was associate professor and professor, successively, of petrology in the University of Chicago. He was Silliman lecturer at Yale University for 1914 and he was an honorary associate in petrology in the United States National Museum after 1917. He was the author of *Rock Minerals* (1906); *Igneous Rocks* (1904; vol. 2, 1913); and *The Problem of Volcanism* (1914); and collaborated in various other treatises, besides writing many geological reports and papers. His work was highly esteemed by his colleagues and his death was made the occasion of several memorials.

ILLINOIS. POPULATION. According to the preliminary report of the census of 1920, there were 6,485,280 residents in the State, Jan. 1, 1920, as compared with 5,638,591 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 237,153, a falling off of 5.8 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	8,652,000	294,168,000	\$173,559,000
	1919	8,400,000	294,000,000	382,200,000
Buckwheat.	1920	4,000	72,000	98,000
	1919	4,000	72,000	130,000
Oats	1920	4,100,000	161,950,000	69,638,000
	1919	4,180,000	125,400,000	87,780,000
Barley	1920	200,000	6,080,000	4,986,000
	1919	200,000	5,400,000	6,534,000
Rye	1920	210,000	3,276,000	4,259,000
	1919	300,000	4,950,000	6,435,000
Broom Corn	1920	18,200	c 4,600	805,000
	1919	15,200	c 4,100	1,107,000
Hay	1920	3,336,000	c 4,166,000	86,447,000
	1919	3,276,000	c 4,842,000	103,258,000
Potatoes	1920	135,000	8,775,000	12,724,000
	1919	140,000	7,280,000	14,269,000
St. Potatoes	1920	9,000	873,000	1,179,000
	1919	9,000	855,000	1,496,000
Soy Beans.	1920	8,000	92,000	361,000
	1919	6,000	60,000	252,000
Sorg'm Si'p	1920	8,900	c 668,000	969,000
	1919	9,000	c 648,000	1,075,000
Clover Seed	1920	196,000	333,000	3,646,000
	1919	140,000	210,000	5,334,000
Wheat	1920	2,650,000	40,670,000	65,479,000
	1919	4,075,000	64,562,000	135,580,000
c Tons. c Gallons.				

EDUCATION. According to the Illinois *Blue Book* of 1919-20 the pupils in the public schools numbered 968,947; in the high schools 112,557; and the teachers numbered 34,597, of whom 5600 were men. The average annual salary of men teachers was \$981 and of women teachers, \$770. Pupils in the private schools numbered 54,312 with 2032 teachers. There were 32 universities and colleges with a combined faculty numbering 2541. Professional schools included 15 theological, 11 law, 8 machine, 3 pharmacy, and 2 veterinary medicine.

FINANCE. The amount of all funds in the State treasury, Oct. 1, 1918, was \$20,995,540; receipts of all sources from Oct. 1, 1918 to June 30, 1920, \$60,883,287; total, \$81,878,827. The disbursements from Oct. 1, 1918 to June 30, 1920 were \$54,341,561. The balance of all funds in the State treasury, July 1, 1920 was \$27,537,266. The principal of the bonded debt of the State outstanding July 1, 1920 was \$17,500. All bonds had been called in by the governor's proclamation and ceased to draw interest but had not yet been surrendered.

CHARITIES AND CORRECTIONS. The State institutions were housing on July 31, 26,525 and employed 3726 men and women. The following table gives the names and populations of the respective institutions for July 31, 1920:

Mental Group	Patients
Elgin State Hospital.....	2,083
Kankakee State Hospital.....	3,252
Jacksonville State Hospital.....	2,176
Anna State Hospital.....	1,726
Watertown State Hospital.....	1,828
Peoria State Hospital.....	2,088
Chester State Hospital.....	176
Chicago State Hospital.....	3,221
Lincoln State School and Colony.....	2,037
Dixon State Colony.....	328
Alton State Hospital.....	707
Total mental group.....	19,422
Miscellaneous Group	
State School for the Deaf.....	265
State School for the Blind.....	210
State Home for the Blind.....	80
Soldiers' and Sailors' Home.....	1,042
Soldiers' Widows' Home.....	92
Soldiers' Orphans' Home.....	320
Eye and Ear Infirmary.....	111
State School for Girls.....	426
State School for Boys.....	854
Total miscellaneous group.....	3,400
Penal Group	
Joliet Prison.....	1,592
Chester Prison.....	1,022
Pontiac Reformatory.....	1,089
Total penal group.....	3,703
Grand total.....	26,525

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 1,420,480; Cox (Democrat), 534,395; Debs (Socialist), 74,747; Watkins (Prohibitionist), 11,216; Christensen (Farmer-Labor), 49,630; Cox (Socialist Labor) 3471; Macauley (Single Tax), 775; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 1,152,549; Wilson (Democrat), 950,229; Benson (Socialist), 61,394; Hanly (Prohibitionist), 26,047; Reimer (Socialist Labor), 2488. The women's vote for Harding was in a larger proportion than that of the men, 73.9 per cent being the proportion for women and 71.5 per cent for men, whereas the proportion of men was greater in the vote for Cox, the percentages being 28.5 for men and 26.1 for women. For Debs the vote was divided between men and women as follows: Men, 555,771; women, 18,976., and same was true of the votes for the Farmer-Labor, Social Labor, and Single Tax candidates, while the vote for the Prohibitionist candidate showed a larger proportion of women. The total women's vote was 799,314. It was the second time in Illinois that women voted for president.

The vote for governor was: Small (Republican), 1,243,148; Lewis (Democrat), 731,551; Laflin (Socialist), 58,998; Walker (Farmer-Labor), 56,490; Woertendyke (Prohibitionist), 9876; Francis (Socialist Labor), 3020; Harlin (Republican), 5985; Parker (Coöperative), 1254; Spaulding (Single Tax), 930; Longworth (Liberal), 357. The vote for United States Senator was: McKinley (Republican), 1,381,384; Walker (Democrat), 554,362; Fraenckel (Socialist), 66,463; Venum (Prohibitionist), 10,186; Fitzpatrick (Farmer-Labor), 50,749; Carrington (Single Tax), 784. The proposal to abolish pri-

vate banks was referred to popular vote and carried by 811,873 to 299,803.

During the summer, a constitutional convention was in session, consisting of two delegates from each of the fifty-one senatorial districts. It was completely under the control of the Republicans. A referendum brought from the voters a decision in favor of making the initiative and referendum and state and principal ownership of public utilities a part of the new constitution.

ILLINOIS, UNIVERSITY OF. A co-educational State institution of the higher learning at Urbana, Ill., founded in 1867. At Chicago are the departments of Medicine, Dentistry, and Pharmacy. Enrollment for the summer session including both men and women, numbered 1402. The total for the university in the fall of 1920 was 8250, of whom 6372 were men and 1878 were women. The total number of university officers was 904, of whom 575 were of the teaching staff. The income funds of the institution for the year was classified as follows: From the United States government, \$313,527.19; State, \$2,871,500; sales, gifts, etc., \$377,538; and from student fees, \$353,684. There were 466,044 volumes in the library. The changes of interest were: Completion of the Smith Memorial Hall, the funds for which were dedicated by Captain Thomas J. Smith and his wife Tina Weedon Smith, to whom the building is dedicated as a memorial (occupied by the School of Music); extension of the work offered by the Senior Unit of the R. O. T. C. (making the Unit the most complete in the country); and establishment of a four-year curriculum in economic entomology. President, David Kinley, Ph.D., LL.D.

ILLINOIS STATE WATERWAY. See CANALS.

IMMIGRATION AND EMIGRATION. During the fiscal year ending June 30, 1920, the total number of immigrants entering the United States was 430,001 as compared with 141,132 in 1919, and an annual average in the five years 1910-14 of 1,034,940. The following table shows the immigration and emigration for the fiscal years 1910 to 1920 inclusive:

gest number being rejected as likely to become a public charge and the next largest number being rejected under the illiteracy test.

DEPORTATIONS. The deportations of the year numbered 2262 as compared with 3086 in the preceding fiscal year, not including deportations under the Chinese exclusion laws, which amounted to 15. Though the number of deportations was smaller than in the preceding year there was an increase in certain important classes; for example, of the criminal class, 229 were deported as compared with 175 in 1919; 314 of the anarchist and kindred classes as compared with 37 in the previous year; 388 of the insane and mentally defective as compared with 158. The above figures apply to deportations after arrest on departmental warrants. The diminution in 1920 was in part the result of war conditions which had caused in 1919 the deportation of 532 Mexicans who had entered under departmental orders providing for their temporary admission during the war and were subsequently deported under the illiteracy provisions.

COUNTRIES OF ORIGIN AND DESTINATION. The chief source of immigration continued to be Europe which during nearly a century prior to the beginning of the war supplied about 90 per cent of the total immigration. During the war the percentage fell to about 60 in 1915, 50 in 1916, 45 in 1917, 28 in 1918, and 17 in 1919. In 1920 it rose again to 57 per cent of the total. The following table shows the distribution by continents during the fiscal year 1920:

Countries	Immigrant aliens admitted	Emigrant aliens departed	Excess of immigrant aliens
Europe	246,295	256,443	*10,138
Asia	17,505	9,441	8,064
British North America ..	90,025	7,668	82,357
Mexico	52,361	6,606	45,755
Other	23,815	8,167	15,648
Total	430,001	288,315	141,086
* Decrease.			

The excess in 1920 was due to the large return movement to Eastern Europe. As will be seen from the following table all northwestern Euro-

TOTAL ALIEN IMMIGRATION AND EMIGRATION, FISCAL YEARS 1910 TO 1920

Year	Immigrant	Arrivals		Total	Departures		Total	Excess of immigration
		Non-immigrant	Immigrant		Non-immigrant	Immigrant		
1910	1,041,570	156,467	1,198,037	202,436	177,982	380,418	817,619	
1911	878,587	151,713	1,030,300	295,666	222,549	518,215	512,085	
1912	838,172	178,983	1,017,155	338,262	282,030	615,292	401,863	
1913	1,197,892	229,335	1,427,227	308,190	303,734	611,924	815,303	
1914	1,218,480	184,601	1,403,081	303,338	330,467	633,805	769,276	
1915	326,700	107,544	434,244	204,074	180,100	384,174	50,070	
1916	298,826	67,922	366,748	129,765	111,042	240,807	125,941	
1917	295,403	67,474	362,877	66,277	80,102	146,379	216,498	
1918	110,618	101,235	211,853	94,585	98,683	193,268	18,585	
1919	141,132	95,889	237,021	123,522	92,709	216,231	20,790	
1920	430,001	191,575	621,576	288,315	139,747	428,062	193,514	

From this it appears that the emigration in 1920 was proportionately much higher than during the pre-war period. In the two years following the war, the emigration nearly offset the immigration and the emigration was still relatively larger during the first six months of 1920, but during the last half of the year the excess of immigrants greatly increased. While in the month of June the excess was only 9887, in each of the months of October and November, the excess was a little over 100,000. Besides the 430,001 immigrants above mentioned, 191,575 non-immigrant aliens were admitted. During the year, 11,795 aliens were excluded, the lar-

gean countries with the exception of Germany showed an excess of immigration over emigration:

Countries	Immigrant aliens,		Average annual im- migration, 1910-1914
	1920	Emigrant aliens, 1920	
Belgium	6,574	1,846	5,690
Denmark	3,137	1,477	6,694
France	8,945	4,477	8,601
Germany	1,001	3,069	32,239
Netherlands	5,187	1,017	7,147
Norway	4,445	3,022	11,416
Sweden	5,862	3,109	17,843
Switzerland	3,785	1,103	3,762
England	27,871	8,099	43,753

IMMIGRATION AND EMIGRATION 336 IMMIGRATION AND EMIGRATION

Ireland	9,591	3,735	27,482
Scotland	9,347	1,488	15,678
Wales	1,258	141	2,274

(May 15, 1917); 5,083 were excluded and 704 expelled after entering down to June 30, 1920.

THE EFFECT ON ALIEN POPULATION. The following table shows to what extent the various foreign elements in the population were increased or decreased by immigration and emigration during the fiscal year:

ORIENTAL IMMIGRATION. The number of Chinese immigrants for permanent residence rose from 3340 in 1919 to 4690 in 1920. The number of those to whom transit privilege was granted rose from 3340 in 1919 to 10,917 in 1920. Of the applicants for entry, 151 were debarred in 1920. Immigration from Japan to Continental

NET INCREASE OR DECREASE OF POPULATION BY ARRIVAL AND DEPARTURE OF ALIENS, FISCAL YEAR ENDED JUNE 30, 1920, BY RACES OR PEOPLES

Race or people	Im-migrant aliens	Non-immigrant aliens	Total	Emigrant aliens	Non-emigrant aliens	Total	(+) or decrease (-)
African (black)	8,174	5,425	13,599	1,275	2,118	3,393	+ 10,206
Armenian	2,762	198	2,960	584	91	675	+ 2,285
Bohemian and Moravian (Czech)	415	135	550	259	59	318	+ 232
Bulgarian, Serbian, and Montenegrin	1,064	1,770	2,834	23,844	1,893	25,737	- 22,903
Chinese	2,148	11,698	13,846	2,961	11,248	14,209	- 363
Croatian and Slovenian	493	727	1,220	7,481	268	7,749	- 6,529
Cuban	1,510	7,477	8,987	1,598	7,567	9,165	- 178
Dalmatian, Bosnian, and Herzegovinian	63	22	85	1,533	85	1,618	- 1,533
Dutch and Flemish	12,730	4,423	17,153	3,016	4,341	7,357	+ 9,796
East Indian	160	121	281	162	42	204	+ 77
English	58,366	35,260	93,626	11,659	33,588	45,247	+ 48,379
Finnish	1,510	320	1,830	1,447	557	2,004	- 174
French	27,390	10,892	38,282	7,026	8,008	15,034	+ 23,248
German	7,838	1,830	9,168	4,178	1,305	5,483	+ 3,685
Greek	18,998	1,426	15,424	20,319	1,948	22,267	- 6,843
Hebrew	14,292	3,231	17,523	358	1,025	1,383	+ 16,140
Irish	20,784	4,330	25,114	4,635	3,838	8,473	+ 16,641
Italian (north)	12,918	3,046	15,964	8,159	2,213	10,372	+ 5,592
Italian (south)	84,882	28,885	113,767	80,955	8,727	89,682	+ 24,085
Japanese	9,279	6,895	16,174	4,238	11,415	15,653	+ 521
Korean	72	9	81	14	22	36	+ 45
Lithuanian	422	43	465	719	25	744	- 279
Magyar	252	54	306	14,619	208	14,827	- 14,521
Mexican	51,042	17,350	68,392	6,412	4,742	11,154	+ 57,238
Pacific Islander	17	33	50	3	5	8	+ 42
Polish	2,519	8,931	11,450	18,392	1,223	19,615	- 8,165
Portuguese	15,174	964	16,138	4,859	1,086	5,945	+ 10,193
Roumanian	898	956	1,854	21,490	1,023	22,513	- 20,659
Russian	2,378	683	3,061	1,151	391	1,542	+ 1,519
Ruthenian (Russiak)	258	136	394	693	32	725	- 331
Scandinavian, Norwegians, Danes, and Swedes	16,621	8,529	25,150	8,246	12,174	20,420	+ 4,730
Scotch	21,180	7,655	28,835	2,577	4,888	7,465	+ 21,370
Slovak	3,824	1,372	5,196	11,568	478	12,046	- 6,850
Spanish	23,594	7,442	31,036	5,144	5,144	10,303	+ 20,733
Spanish American	3,934	5,102	9,036	1,126	4,413	5,539	+ 3,497
Syrian	3,047	991	4,038	1,652	730	2,382	+ 1,656
Turkish	140	55	195	1,340	173	1,513	- 1,318
Welsh	1,462	735	2,197	195	303	498	+ 1,699
West Indian (except Cuban)	1,546	1,989	3,535	626	1,948	2,574	+ 961
Other peoples	1,345	435	1,780	1,802	388	2,190	- 410
Grand total	430,001	191,575	621,576	288,315	139,747	428,062	+193,514
Admitted in and departed from Philippine Islands	10,009	6,662	16,671	1,509	11,109	12,618	+ 4,053

ILLITERACY. During the fiscal year 15,094 illiterate aliens above the age of 16 were admitted under the exemptions of the law of exclusion, constituting 44 per cent of the total number admitted for permanent residence. The effect of the illiteracy test may be judged from the fact that in the years before the war between 200,000 and 300,000 illiterate aliens were admitted. In 1914, for example, they numbered 260,152, of whom a large proportion would have been rejected after the application of the illiteracy test

United States increased by 13 per cent over the preceding year, but Japanese immigration to Hawaii decreased by 6 per cent. The table below shows the numbers admitted, debarred, etc.

The chief feature of the situation in 1920 was the effect on future immigration of the state of affairs in central and eastern Europe. It seemed probable that immigration from eastern Europe would resume its pre-war volume at an early date. During the fiscal year there was little change in the situation and immigration

JAPANESE ALIENS APPLIED FOR ADMISSION, ADMITTED, DEBARRED, DEPARTED, AND DEPARTED, FISCAL YEARS ENDED JUNE 30, 1919 AND 1920

	1919		1920	
	Continental U. S.	Hawaii	Continental U. S.	Hawaii
Applications for admission	11,466	3,609	13,013	3,355
Admitted	11,404	3,500	12,868	3,306
Debarred from entry	62	109	145	49
Departed after entry	184	4	46	4
Departures	8,328	2,905	11,662	3,991

48 Koreans were admitted in Hawaii, and 25 departed therefrom.

38 Koreans were admitted in continental United States, and 11 departed and 1 was debarred therefrom.

from that quarter continued to be negligible according to the data available to the Bureau of Immigration. In Great Britain, immigration seemed to be returning to normal conditions. French immigration which had averaged in 1910-14, 8601 annually amounted in 1920 to 8945. During the fiscal year 1920, there were signs that the immigration from Belgium, Denmark, the Netherlands, Scandinavia, and Switzerland would before long return to its pre-war volume. An important feature of the immigration in 1920 was the great increase in the immigration from Spain, which down to that time had contributed only a few thousand. In 1920 it reached the number of 18,821. Immigration from Portugal also reached the highest point in its record. Italian immigration recommenced shortly after the war and in 1920 reached a total of 95,145, which was about half of the annual average during the 15 years preceding the war. The same was approximately true of Greece, which supplied 11,981 in 1920.

An important question for the future was the extent to which the immigration from Russia would again become a serious factor. Before the war the main immigration from within the limits of the Russian Empire came from the regions not included under the present Soviet government consisting of Hebrews, Finns, Poles, and Lithuanians. The Russians themselves, however, had risen in 1914 to a considerable figure, namely 40,241 and they came from the territory that is now under Soviet control. It was a question whether the volume of immigrants from Soviet Russia would resume its pre-war dimensions. In 1920 Russia was still for the most part shut off from the rest of the world. The Asiatic situation had not materially changed since 1919 with the exception that the immigrants from Asiatic Turkey who had numbered only 19, rose in 1920 to 5033, chiefly owing to the fact that the Syrians and Armenians were again beginning to enter the country.

At the close of the year, the Inter-Racial Council figures indicated an enormous volume of immigration. From various sources it was learned that large numbers of persons in European countries were waiting for the first chance to emigrate to the United States. There was much complaint in the United States that the laws in respect to qualifications of immigrants were not enforced. It was admitted that it was very difficult to enforce the laws, since the disabilities to which they referred were not easily determinable. According to the laws, these disabilities included mental, moral, physical, political, educational, and economic disqualifications. The most serious aspect of the subject according to many, especially among those influenced by recent campaigns pertaining to 100 per cent Americanism, was the danger of radicalism among the classes likely to immigrate. At the close of the year a vigorous debate was going on between the various associations interested in free immigration, and those who favored restriction. The bill restricting immigration was pending in Congress at the close of the year, having passed the House. Many protests and requests for changes in it were received. See UNITED STATES.

OCCUPATIONS. The following table shows the distribution of immigrant aliens by occupations during the fiscal year:

Occupations	Number, 1920	Per cent of total 1910-1914	
		1920	1914
Professional	12,442	2.9	1.2
Skilled	69,967	16.3	14.5
Farm laborers	15,257	3.5	24.3
Farmers	12,192	2.8	1.1
Laborers	81,732	19.0	18.4
Servants	87,197	8.7	11.7
Other occupations	28,081	6.4	2.7
No occupation (including women and children)	173,133	40.3	26.2
Total	430,001	100.0	100.0

IMPORTS. See articles on COUNTRIES.

INCENDIARISM. See FIRE PROTECTION.

INCOME TAX. See TAXATION.

INDEPENDENT METHODIST CHURCH.

See METHODISTS, WESLEYAN.

INDIA, BRITISH. The territory administered by the British sovereign as emperor of India, through the Viceroy or Governor-General in Council. In addition to regions directly governed by British officials it includes the Native States that are under the suzerainty of the British government. Capital, Delhi.

AREA AND POPULATION. Area including Native States, 1,802,629 square miles; pop. (1911) 315,156,396. No later figures were available than those given in the 1917 YEAR BOOK, which present the details.

EDUCATION. The number of persons with a knowledge of English was placed in 1919 at slightly under 18,000,000. Educational institutions are classed as public or private, according as they are or are not under the department of public instruction. The following table taken from the *Statesman's Year Book* of 1920 gives the number of institutions and scholars in British India, including Ajmer-Merwara, British Baluchistan, and the station of Bangalore, in the year 1918:

	Institutions for		Scholars	
	Males	Females	Males	Females
Colleges	185	16	61,827	1,109
General Education				
Secondary	7,147	707	1,094,604	103,982
Primary	128,480	19,395	4,855,571	1,077,170
Special Schools ..	8,301	279	107,421	10,058
Private Institutions	35,407	2,002	564,456	71,870
Total	174,520	22,399	6,683,879	1,264,189
Grand total	196,919		7,948,068	

There are non-teaching universities at Calcutta, Bombay, Madras, Punjab, Allahabad, and new universities have of late years been established at Mysore, Benares, Patna and Dacca, and projected for Rangoon and Nagpur. At the last census the number of natives able to read and write was placed at 106 males and 11 females per thousand. Indian students in the United Kingdom averaging 1500 to 1600 a year are aided by a student department in England under an educational adviser. In the year 1917-18, £7,880,609 were expended for public institutions and of this over 50 per cent came from fees, provincial resources, local rates, municipal funds, and endowments. There are state scholarships enabling native graduates to pursue studies at a British university.

PRODUCTION, ETC. The chief occupation is agriculture, over 226,000,000 being engaged in it directly or indirectly, and the chief source of revenue next to the income from railways is the land tax. The following (from the *Statesman's*

Year Book for 1920) are the provisional figures for crop production in the year 1918-19:

Name of Crops	1918-19 Provisional	
	Area Sown Acres	Yield Tons
Rice	75,864,000	23,672,000
Wheat ¹	23,764,000	7,502,000
Cotton	20,497,000	3,671,000
Linseed, pure	1,652,000	170,000
Linseed, mixed	321,000	59,000
Rape & Mustard, pure	2,999,000	476,300
Rape & Mustard, mixed	1,848,000	283,000
Sesamum, pure	2,576,000	220,000
Sesamum, mixed	925,000	38,000
Groundnut	1,312,000	490,000
Jute ²	2,500,400	6,955,600
Indigo	300,700	In Cwts. of Dye 44,100
Sugar-cane	2,820,000	Tons 2,337,000
Tea	678,500 ³	Lbs. 380,459,000 ³

¹ Including Native States.

² Excluding Nepal, for which no estimate of area or yield is available. The figures of imports from Nepal are, however, 92,000 bales in 1915, 70,000 in 1916, and 41,000 in 1917 and 13,000 in 1918.

³ Figures are subject to revision.

There are two systems of land tenure. The one consisting of large holdings in the hands of so-called *zamindari* and village communities, which prevails in Bengal, the Punjab and the United Provinces and is found to some extent in the Central Provinces, Madras and Assam. The other or *ryot* system consists of small holdings under private proprietors and prevails in Bombay, Madras, Sind, Burma, Assam, and is also found to some extent in the Central Prov-

figures there were 266 cotton mills with 101,017 looms and 6,263,569 spindles. Other industries include woolen and paper manufactures, breweries, etc.; but the value of the output is small. Forestry has lately received much attention and is important owing to the large area of forest land—estimated in 1918 at 86,924,932 acres. The leading mineral products are coal, gold, petroleum and manganese ore. In 1918 the quantity of coal produced was 19,847,000 tons. The figures for 1919 according to the chief inspector of mines showed an increase. The total production was 21,759,727 tons, the output in tons of the various provinces being as follows: Assam, 291,134; Baluchistan, 29,124; Bengal, 5,777,632; Bihar and Orissa, 15,117,903; Central Provinces, 497,021; North West Frontier Province, 20; and Punjab, 46,893. See AGRICULTURE.

COMMERCE. The year opened with a very favorable trade position, but as the months passed this was completely reversed. A new exchange rate for the rupee was fixed at two shillings gold, in consequence. Demand for Indian produce declined in western markets and at the close of the year the rupee had fallen 50 per cent below its exchange rate in the spring. The following information in regard to the foreign trade for the fiscal year 1920 was supplied by the United State Bureau of Foreign and Domestic Commerce: Preliminary figures of India's seaborne foreign trade for the year ended March 31, 1920, place the value of the imports at \$674,819,900, of the exports at \$1,003,308,700, and of the re-exports at \$57,677,800, making the total merchandise trade \$1,735,806,400 and giving a balance in India's favor of \$386,166,600. The corresponding figures for the two preceding years were:

Year ended Mar. 31	Imports		EXPORTS		Total merchandise trade	Balance in India's favor
	Indian	Foreign	Indian	Foreign		
1918	\$488,029,200	\$757,340,700	\$29,589,100	\$786,929,800	\$1,274,959,000	\$298,900,600
1919	548,403,000	776,450,300	47,225,500	823,675,800	1,372,078,800	275,272,800
1920	674,819,900	1,003,308,700	57,677,800	1,060,986,500	1,735,806,400	386,166,600

inces. The cultivation of opium, which is a government monopoly, has diminished as the result of the agreement with China to restrict the output. It is grown in Baroda and in some of the Native States and manufactured for the foreign market in factories at Ghazipur and Patna. The cotton industry is of considerable importance and is largely in the hands of native Indians. Most of the mills are in the Bombay Presidency. According to the latest available

In connection with the foregoing table it should be noted that conversion from rupees have been made at the normal rate of \$0.3244½ for all years. Exchange, however, fluctuated during this period, being above par most of the time. Classified under the four great groups into which Indian official statistics are divided, India's seaborne foreign commerce during three years had the following values:

Classification	Year ended March 31—		
	1918	1919	1920
Imports			
Food, drink, and tobacco	\$87,719,800	\$98,922,700	\$133,436,600
Raw materials and produce and articles mainly unmanufactured	31,809,900	32,245,600	56,253,200
Articles wholly or mainly manufactured	356,629,800	399,863,200	471,756,600
Miscellaneous and unclassified	11,875,700	17,371,500	13,373,500
Total imports	\$488,029,200	\$548,403,000	\$674,819,900
Exports of Indian Merchandise			
Food, drink, and tobacco	\$245,854,600	\$205,249,200	\$137,002,800
Raw materials and produce and articles mainly unmanufactured	269,145,700	280,644,100	519,310,800
Articles wholly or mainly manufactured	235,946,100	283,872,500	384,961,800
Miscellaneous and unclassified	6,394,300	6,684,500	12,032,800
Total exports of Indian merchandise	\$757,340,700	\$776,450,300	\$1,003,308,700
Exports of Foreign Merchandise			
Food, drink, and tobacco	\$9,094,500	\$9,459,300	\$16,801,500
Raw materials and produce and articles mainly unmanufactured	4,411,800	6,580,200	7,090,400
Articles wholly or mainly manufactured	15,238,600	29,296,800	31,736,800
Miscellaneous	844,200	1,889,200	2,049,100
Total exports of foreign merchandise	\$29,589,100	\$47,225,500	\$57,677,800

SHIPPING. The net register tonnage of vessels including native craft that entered and cleared with cargoes and in ballast during the year 1918-19 was 10,480,000 tons as against 10,868,000 tons in 1917-18, and 16,216,000 tons, the pre-war quinquennial average. This illustrates the effect of the war on shipping so far as India is concerned. Of the total tonnage entered and cleared during 1918-19, steamers constituted 96 per cent (10,028,000 tons), and sailing vessels (Indian and foreign) only 4 per cent (452,000 tons). The average tonnage per steamer in that year was 1036 against 1868 in 1917-18 and 2582, the pre-war average. Here again is another instance of the effect of war on shipping. The following statement shows the clearances of vessels, with cargoes and in ballast, engaged in overseas trade:

Nationality Entered	1917-18		1918-19	
	Number	Tons	Number	Tons
British	2,054	3,404,118	2,041	3,582,541
British Indian...	360	101,733	258	56,768
Total British...	2,414	3,505,851	2,299	3,639,309
Japanese	235	510,789	306	671,216
Dutch	114	266,473	79	283,304
Norwegian	106	139,756	76	107,607
Italian	99	265,231	46	119,376
Chinese	49	49,084	72	77,808
Greek	46	94,761	20	41,947
Swedish	27	53,946	15	38,743
French	25	47,287	20	45,827
Spanish	18	44,702	10	26,801
Russian	12	17,325	18	12,896
American	12	36,054	25	37,643
Other nationalities	15	35,582	16	46,550
Total foreign...	758	1,560,990	703	1,459,218
Native craft...	2,327	182,827	1,659	155,093
Total entered...	5,499	5,249,668	4,661	5,253,620
Cleared				
British	2,146	3,798,542	1,903	3,447,422
British Indian...	324	53,198	244	38,194
Total British...	2,470	3,846,740	2,147	3,480,616

RAILWAYS. The railways open for traffic March 31, 1919 had a mileage of 36,616 of which 7308 consisted of state lines worked by the state and 19,107 of state lines worked by companies. During the year the government of India approved a project to build an India-Afghanistan railway, by extending the government railway from Jamrud, where it terminated, up the Khyber Pass to the Afghan frontier. The line was to be the Indian standard broad gauge of 5 ft. 6 in. The project also contemplated the hope that the Afghan government would build a line from Kabul, the capital, to connect with this line at the frontier, in order to develop commerce and trade, and at the same further the cause of civilization, since the projected line would transverse a country inhabited by warlike tribesmen.

GOVERNMENT. The source of both executive and legislative power is the Governor-General in Council. The Council consists of 8 ordinary members appointed by the Crown for five years, two being natives of India. Under the Indian Council's Act of 1909 the Governor's Council is expanded into an Imperial Council of 68 members of whom 36 are nominated and 32 elected by various representative bodies of natives and of commercial interests. Governor-General in 1920, Lord Chelmsford; Secretary of State for India, E. S. Montague; High Commissioner for India in London, Sir William Meyer.

FINANCE. The budget for 1919-20 was as follows:

Revenue	1918-20 £
Principal heads of revenue:	
Land revenue.....	22,090,800
Opium	2,990,800
Salt	3,754,000
Stamps	7,223,100
Excise	12,752,300
Provincial rates.....	36,100
Customs	14,919,500
Interest	4,380,100
Posts and telegraphs.....	5,996,800
Mint	1,669,700
Receipts by civil departments:	
Law and justice.....	902,900
Police	170,600
Ports and pilotage.....	136,700
Education	325,800
Medical	114,100
Other departments	507,800
Total	£ 2,157,400
Miscellaneous	1,862,800
Railways (net receipts).....	21,377,300
Subsidized Cos.....	230,000
Total	£ 21,607,800
Irrigation:	
Major works, portion receipts.....	8,546,700
Major works, port of land revenues due to irrigation.....	2,000,700
Minor works	296,200
Total	£ 5,843,600
Other public works.....	363,500
Military services	7,141,600
Total Revenue.....	£ 135,570,000
Expenditure	
1918-20	
£	
Direct demands on the revenues:	
Refunds and drawbacks.....	1,379,200
Assignments and compensation.....	1,326,400
Collection charges, viz.:	
Land revenue.....	4,269,300
Opium	899,100
Salt	563,600
Stamps	258,500
Excise	603,500
Customs	307,900
Income tax.....	100,900
Forest	2,132,600
Registration	321,800
Total	£ 12,162,800
Interest	8,984,200
Posts and telegraphs.....	4,725,500
Mint	356,200
Expenditures on civil departments:	
General administration.....	2,696,600
Law and justice.....	5,275,500
Police	6,800,000
Ports and pilotage.....	309,600
Education	4,523,100
Ecclesiastical	134,700
Medical	2,197,800
Political	2,148,100
Other departments.....	1,780,500
Total	£ 25,845,000
Miscellaneous civil charges:	
Territ. and pol. pensions.....	209,500
Furlough and absentee allowances.....	605,000
Superannuation	3,714,600
Stationery and printer.....	1,215,500
Miscellaneous	753,600
Total	£ 6,498,200
Famine relief and ins.....	1,248,100
Railway rev. acc't.....	14,590,200
Irrigation	4,231,200
Other public works.....	6,909,000
Military services	60,091,600
Excess or deficiency on provincial adjustments	+52,300
Total Expenditure.....	£ 145,644,100

DISORDERS. There were serious strikes in the early part of the year. In January a cotton mill strike at Bombay involved 200,000 workers. In June the railway employees threatened to stop

work unless wages and conditions of employment were improved. Despatches at the beginning of February indicated that the disorders on the northwest frontier which had been giving difficulty for some weeks were being put down. In February the judicial committee of the Privy Council dismissed the appeal of the 21 Indian natives, accused of violence during the riots at Amritsar which had been a leading subject of discussion in the previous year and which led to many charges against the military administration. The counsel for the prisoners declared that they had not been taken in arms, but were arrested after the rioting had ceased and were therefore not amenable to the military authorities.

THE BOLSHEVIST PERIL. As in the previous year there was constant fear of the advance of the Bolsheviks toward India and the spread of Bolshevik views in India itself. At the beginning of the year alarm was expressed in the British newspapers, over the occupation by the Bolsheviks of Trans-Caspia. There was reported to be a large Bolshevik element at Baku in Trans-Caucasia and the Turks were penetrating into that region from the south. The Bolsheviks were at this time reported to be recruiting their forces from Turkestan. Many rumors were afloat during the year as to Bolshevik advances through Persia toward the Indian frontier and Bolshevik designs on China. In the arrangement proposed at the close of the year for resumption of trade between Great Britain and Russia, Lloyd George had stipulated that Bolshevik propaganda in India should cease (See GREAT BRITAIN, *History*).

NEW ADMINISTRATIVE SYSTEM. In August, the new system of administration under the Montagu act of 1919 was announced and five new governors for the Indian provinces were appointed, namely: Sir Harcourt Butler, The United Provinces; Sir Edward Maclagan, Punjab; Sir Frank Sly, Central Provinces; Lord Sinha of Raipur, Bihar and Orissa; and Sir William Morris, Assam. All these officers had had experience in the administrative service. Lord Sinha had been Under-Secretary of State for India since 1919, being the first Indian to hold a cabinet position. This change was made pursuant to the plans proposed in the Montagu-Chelmsford reports. There was great enthusiasm over the appointment of Lord Sinha, but at the same time the agitation of the Nationalists continued and the prominent agitator Mr. Gandhi toured the country with a view to stirring up opposition to the government. Among the masses there was strong anti-British feeling owing largely to the circularization of rumors in regard to British oppressions and atrocities; and the continuance of the "Rowlat regulations" which practically amounted to the maintenance of martial law gave much offence. The dates for the coming into effect of the new administration system were fixed on December 16 as follows: Madras, December 17; Bihar and Orissa, December 29; Bengal, Bombay, Punjab, Assam, and the United Provinces, Jan. 31, 1921.

THE "HOME RULE" MOVEMENT. The movement for home rule in India of which Mrs. Annie Besant was a conspicuous advocate continued. On September 8, the National Indian congress for the purpose of furthering Indian independence was won over to Mr. Gandhi's programme of "non-coöperation" which included the boycotting of the courts by lawyers, of the legislative councils by public men, of foreign imports by consumers

and of educational institutions by students, with a view to enforcing the independence of India. These measures were opposed by Mrs. Besant as going too far; but they were voted by the congress which also voted in favor of the giving up of all honors and positions bestowed on Indians by the government. There was anxiety among the supporters of the government lest this campaign should be carried out. Meanwhile in England, a vigorous opposition had developed in the House of Commons against Mr. Montagu, the Secretary for India. Parliament passed a vote of censure on General Dyer on account of the killing of Indians at Amritsar in 1919 (see preceding YEAR BOOK) and that officer was retired. There was strong feeling on the part of many against the government on account of the lightness of the punishment, while the Unionists on the other hand were opposed to the vote of censure.

THE GENERAL SITUATION. The changes made under the Montagu programme for the purpose of giving the natives a greater degree of direct responsibility in the government did not satisfy the extreme element among them; and discontent was manifested throughout the entire year. The opposition on the part of the Unionists in the home Parliament to the vote of censure and the retirement of General Dyer had an unfavorable effect upon native feeling, and discontent was also heightened by the proposals which tended to give the army in India over to the control of the war forces, placing the latter in command of troops maintained at the cost of India. These recommendations had been made in the Esher army report. In general, there was little popular support for the government programme, but in respect to the educational institutions, there seemed to be a popular demand for their maintenance and no sympathy with the demand of Mr. Gandhi that they should be opposed because they were supported by the State. Moreover, the moderates obtained a majority in the newly elected councils, the effort to boycott the election having failed.

ARMY REORGANIZATION PLAN. Measures of army reorganization aiming at military unity were under consideration, comprising the following main features: Diminution of the detailed control exercised by the India Office. Membership of the India Council by an officer of high military rank to be abolished. The military department secretary at the India Office to be a deputy chief of the Imperial General Staff, the Chief, either directly or through him, being the sole responsible military adviser of the Secretary of State. The Commander-in-Chief in India to be the sole military adviser of the government of India, and to be the administrative as well as the executive head of the army, the army department and the headquarters staff being consolidated under him.

The Defence Committee set up in India during the war to be continued; a Military Council to be established; and decentralization to be promoted by the formation of four commands, each under an army commander graded as a general officer commanding-in-chief. Liberal and sympathetic treatment of all ranks in the army in India and the removal of such grievances as are shown to exist. Existing services to be recognized, and new services to be developed and equipped.

INDIANA. POPULATION. According to the preliminary report of the census of 1920, there

were 2,930,390 residents in the State, Jan. 1, 1920, as compared with 2,700,876 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 205,124, a falling off of 4.8 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	4,545,000	184,072,000	\$108,602,000
	1919	4,500,000	168,500,000	208,125,000
Buckwheat.	1920	10,000	200,000	240,000
	1919	10,000	165,000	248,000
Oats	1920	1,875,000	76,875,000	35,862,000
	1919	1,750,000	56,000,000	38,640,000
Barley	1920	75,000	2,025,000	1,762,000
	1919	70,000	1,750,000	2,065,000
Wheat	1920	1,960,000	23,540,000	39,312,000
	1919	2,835,000	42,332,000	88,897,000
Clover Seed	1920	95,000	142,000	1,548,000
	1919	75,000	75,000	2,048,000
Rye	1920	310,000	4,340,000	5,642,000
	1919	360,000	5,040,000	7,056,000
Tobacco ...	1920	20,000	18,000,000	2,520,000
	1919	20,000	16,000,000	5,632,000
Hay	1920	2,230,000	2,874,000	55,279,000
	1919	2,125,000	2,592,000	55,765,000
Potatoes ..	1920	80,000	7,680,000	10,214,000
	1919	85,000	3,740,000	7,293,000
Sorg'm Si'p	1920	15,000	1,230,000	1,722,000
	1919	14,000	1,148,000	1,688,000
Cowpeas ..	1920	7,000	112,000	336,000
	1919	6,000	90,000	306,000

* Pounds. * Tons. * Gallons.

FINANCE. The latest available figures were those for the fiscal year ending September 30, 1920. The balance on hand at that time was \$4,568,397.37; that of a year earlier, \$3,974,851.34. The receipts during this period amounted to \$17,343,244.77, while the disbursements were \$16,749,698.74.

TRANSPORTATION. The total railroad mileage of the State in 1919 was as follows: Main track 7195.71; second main track, 1356.54; third track, 62.61; fourth track, 26.74; and side track, 4486.95. The total mileage in 1920 was as follows: Main track, 7161.22; second main track, 1369.27; third track, 62.74; fourth track, 26.74; and side track, 4547.44.

CHARITIES AND CORRECTIONS. The names of the institutions, the situation, date of founding and number of inmates present on Sept. 30, 1920, were as follows:

Reformatory, Jeffersonville, (1821) 710.
 School for the Deaf, Indianapolis, (1844) 276.
 Central Hospital for the Insane, Indianapolis, (1845) 1401.
 School for the Blind, Indianapolis, (1847) 115.
 Prison, Michigan City, (1859) 881.
 Boys' School, Plainfield, (1867) 527.
 Soldiers' and Sailors' Orphans' Home, Knightstown, (1867) 282.
 Woman's Prison, Indianapolis, (1869) 73.
 School for Feeble-Minded Youth, Ft. Wayne, (1879) 1414.
 Northern Hospital for the Insane, Logansport, (1883) 898.
 Eastern Hospital for the Insane, Richmond, (1883) 1006.
 Southern Hospital for the Insane, Evansville, (1883) 782.
 Soldiers' Home, Lafayette, (1896) 641.
 Girls' School, Clermont, (1903) 867.
 Southeastern Hospital for the Insane, North Madison, (1905) 1217.
 Village for Epileptics, Newcastle, (1905) 371.
 Sanatorium, Rockville, (1907) 105.
 Robert W. Long Hospital, Indianapolis, (1911) 1226.
 State Farm, Putnamville, (1913) 817.
 Farm Colony for the Feeble-Minded, Butlerville, (1919).

On September 30, 1920 the total population of the several State institutions was 11,505; of the county poor asylums, 3087; of the county jails, 563; and of institutions for dependent chil-

dren, 1560, making a total of 16,715. Expenses for these purposes in 1919-1920 were as follows: State institutions, \$4,357,359.10; county poor asylums, \$1,086,748.63; dependent children, \$386,195.59; county jails, \$175,273.23; and outdoor poor relief, \$387,834.62.

EDUCATION. The school revenue in 1919-1920 was \$20,889,797.30. In 1919-20 there were 784,430 children enumerated in the State (between 6 and 21 years). The enrollment in the schools was 566,089. There were 15,680 elementary and 4754 high school teachers.

LEGISLATION. Two special sessions of the legislature were held during the year 1920. At the first session, the Federal woman suffrage amendment of the constitution was ratified. The only important laws enacted at the second special session were the following: Changes in the election laws to enable women to vote; blue sky law; creating a special coal commission to regulate the price of coal, to require operators to supply a determined amount of coal to the public and to prescribe the priority in which coal shall be supplied to consumers; authorizing cities and counties to establish aviation fields, and providing for the erection of a State world war memorial as the headquarters of the American Legion.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 696,370; Cox (Democrat), 511,364; Debs (Socialist), 24,703; Watkins (Prohibitionist), 13,462; Christensen (Farmer-Labor), 16,499; Macauley (Single Tax), 566; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 341,005; Wilson (Democrat), 334,063; Benson (Socialist), 21,855; Hanly (Prohibitionist), 16,368; Reimer (Socialist Labor), 1659; Progressive, 3898. The election for governor in 1920 was: McCray (Republican), 683,253; McCullough (Democrat), 575,253; Hart (Socialist), 23,228; Kroft (Prohibitionist), 12,235; Zion (Farmer-Labor), 16,626. The vote for United States Senator, was: Watson (Republican), 681,654; Taggart (Democrat), 519,191; Wampler (Socialist), 23,395; Vayhinger (Prohibitionist), 13,323; Dillon (Farmer-Labor), 16,804.

OFFICERS. Governor, Warren T. McCray; Lieutenant-Governor, Emmett F. Branch; Secretary of State, Ed. Jackson; Treasurer of State, Ora Daviess; Auditor of State, William G. Oliver; Attorney-General, U. S. Lesh; Clerk of the Supreme Court, Patrick J. Lynch.

JUDICIARY. SUPREME COURT: David A. Myers, Howard L. Townsend, B. M. Willoughby, Julius C. Travis, Louis B. Ewbank.

INDIANA, UNIVERSITY OF. A co-educational State institution, at Bloomington, Ind., founded in 1820. In the summer session of 1920, there were 634 men and 845 women enrolled, and in the fall session, there were 1416 men and 1163 women. The faculty numbered 206. The productive funds amounted to \$750,000. Income for the year amounted to \$927,206. There were 135,367 volumes in the library. A school of Commerce and Finance was established. President, William Lowe Bryan, Ph.D.

INDIANS. There was reference in the commissioner's report of June 30, 1920, to the so-called policy of turning the Indians loose. A movement to this end had been organized in recent years which aimed at abolishing the Bureau of Indian Affairs and releasing Indians

from government supervision. The argument against such a plan was to the effect that while the release of Indians having a larger proportion of white than of Indian blood was expedient, great care should be taken in removing restrictions from persons having one-half or more Indian blood, lest they should fall into the hands of unscrupulous exploiters. It was estimated that 73 per cent of the Indians, exclusive of those in the Five Civilized Tribes were over half-blood, and that about 50 per cent within the Five Civilized Tribes were in that class; also that only 55 per cent of the Indians under Federal supervision, exclusive of the Five Civilized Tribes, were able to speak the English language and that only 37 per cent were able to read and write English. No later figures for school attendance were available than those contained in the 1919 report which showed that out of 84,922 Indian children eligible for school, 60,889, or 72 per cent were in attendance. Outside the Five Civilized Tribes only 41,333, or 64 per cent, were in attendance. Reports indicated that there were hundreds of Indian children who never came in contact with any school. The need of schools in the southwest was especially urgent. In Arizona, for example, over 55 per cent of the children eligible for school were not in attendance and in New Mexico over 49 per cent. In the Navajo country the condition was the worst, 72 per cent of the eligible children being out of school. Out of 1449 Papago children, 796 were out of school. School attendance in the Five Civilized Tribes in Oklahoma was reported as unsatisfactory, only 80 per cent of the eligible children being enrolled. The report for 1920 called attention to the bad health conditions among the Civilized Tribes of Oklahoma and especially to the ravages of tuberculosis and trachoma which had continued to spread through the Indian communities in eastern Oklahoma. The inadequacy of the means of dealing with the situation and the urgent need of men and money repeatedly indicated during several years past were again called to the attention of the authorities. See ANTHROPOLOGY.

INDIA RUBBER. See RUBBER.

INDO-CHINA, also known as **FARTHER INDIA**. The southeastern peninsula of Asia, including the following divisions: Burma, politically attached to British India; Siam, a self-governing kingdom; French Indo-China, including Annam, Cambodia and Cochin China, Laos, and Tongking; the Federated Malay States; the Straits Settlements proper, and the Malay states of Johore, Kedah, Perlis, Kelantan, and Trengganu. See the articles **BURMA**, **FRENCH INDO-CHINA**, **SIAM**, and the other principal states mentioned above.

INDO-IRANIAN. See PHILOLOGY.

INDUSTRIAL WORKERS OF THE WORLD. Public interest in the I.W.W. has centred around two court actions against members of the "One Big Union,"—one at Montesano, Washington, where the eleven men accused of shooting into an Armistice Day parade at Centralia, Washington, on Nov. 11, 1919 (see preceding **YEAR BOOK**) were on trial, and the other in Chicago, where the United States Circuit Court of Appeals passed on the verdict charging some 40 members of the I.W.W. with conspiracy. The trial of the Centralia members of the I.W.W. took place at Montesano, in Gray's Harbor county,

after a change of venue had been asked from Lewis County on account of the strong local feeling against the defendants. A second change of venue was asked, but refused. Two weeks were required to obtain the twelve jurymen and two alternates requested by the judge, and 127 men were examined, from a panel of 378. The eleven defendants, Britt Smith, Elmer Smith, McInerney, Faulkner, Sheehan, Bert Bland, O. C. Bland, Loren Roberts, and John Lamb, together with Wesley Everest, who was taken from the Centralia jail on the night of November 11th and lynched by the mob, and Ole Hanson and Davis, two other I.W.W. who were not apprehended, were charged with the murder of Warren O. Grimm, an ex-service man of Centralia and a member of the American Legion. Evidence was introduced by the State to show that the death of Grimm resulted from the spontaneous firing of the I.W.W. members upon the paraders, and by the defense to show that it resulted from shots or a shot fired in self-defense after the paraders had attempted a raid and had themselves fired upon the I.W.W. hall.

Mr. Vanderveer, the attorney for the defense, voiced an opinion which was widely current in labor and liberal circles, when he stated that the issue was not the murder of one man by another man or group of men, but capitalism against the new philosophy of labor which demands that the industrial system be conducted for service rather than for profit, and which is represented by the I.W.W. He introduced evidence to show that two years previously, following a Red Cross parade, the I.W.W. hall had been raided and property destroyed; that appeals to the legal authorities for protection had been fruitless; that a second raid was known to be contemplated by the Merchants and Manufacturers' Association. He claimed that this group of employers, after learning from the chief of police that there was no legal way in which they could run the I.W.W. out of town, had planned a raid, for which the American Legion was made a catspaw. The I.W.W., knowing of these plans, had armed themselves and stationed their members at various points prepared to fight, but had fired only after they had first been fired upon by the paraders, according to his contention.

The evidence as to whether the paraders or the I.W.W. fired the first shots was hopelessly conflicting,—a fact sufficiently natural under the circumstances, with a large number of by-standers, no one of whom had his attention centred on the I.W.W. hall until attracted by the confusion of shots. The evidence introduced by Attorney Vanderveer to show that there had been a conspiracy against the I.W.W. and that the knowledge of this conspiracy justified them in arming themselves in self-defense, was ruled out by the court on the ground that only evidence tending to show an overt act on the part of Grimm could be introduced for that purpose. The court also ruled that the right of men to defend themselves did not include the right to station men outside a dwelling or other place for such purpose.

The jury, after an all day deliberation, brought in a first verdict, which was not received because it found Barnett and John Lamb, who were shown to have fired the shot that killed Grimm, guilty of murder in the 3rd degree, or manslaughter. The judge instructed them that the verdict must be murder in the 1st or 2nd degree, or not guilty.

After two hours more deliberation, a final verdict of murder in the 2nd degree was brought in for seven of the defendants. Elmer Smith, an attorney, had previously been released on instruction by the court, and Faulkner, one of the men whom the evidence showed to have been unarmed, had also been discharged. Sheehan was found not guilty, and Loren Roberts was found insane. The verdict was unsatisfactory to both sides, the State claiming that it was a travesty of justice, and the defense that the men should have been declared not guilty. Mr. Vanderveer announced his intention of appealing the case on the grounds of prejudice of both judge and jury. All the defendants were immediately re-arrested for the murder of McElfresh, another of the ex-service men killed.

Some indication of the forces behind the events with which the trial was concerned may be gained by noting some of the unusual circumstances in connection with it. Chief among these was the presence of a "Labor Jury," six men chosen as delegates from various labor bodies of the Northwest to sit through the trial, consider the testimony offered, and report their verdict. Their report, made on the basis of the evidence which the court rejected as well as that which it allowed, was:

That the I.W.W. was not guilty of a conspiracy to murder Grimm and the other men who were killed;

That there was a conspiracy of the business interests of Centralia to wreck the I.W.W. hall;

That the hall was raided before the shooting started and that the I.W.W. had a right to defend it;

That Warren O. Grimm was a party to the conspiracy to raid the hall;

That the defendants did not get a fair trial on account of the exclusion of vital evidence.

A large part of the audience at the trial was made up of ex-service men who appeared in uniform and who were suspected of being paid for their time for the sake of the influence they might have upon the jury. After the trial was begun, a detachment of troops from Camp Lewis was sent to Montesano, and took up their headquarters immediately opposite the courthouse. The defense protested against this step on the ground that the troops produced an unfavorable mental attitude on the part of the jury. It was found that the prosecution had asked the governor to send troops without consulting either the court or the sheriff, both of whom denied the need for troops. The court, however, refused to ask for their removal, and they remained.

That the Centralia episode resulted adversely to the I.W.W. was fairly clear from the evidence of public opinion and of the courts. The I.W.W. claimed that their self-defense was expedient, and that they were less frequently molested after they had shown that they could fight. But, according to the statement of a careful observer, whereas previously all cases of "criminal syndicalism" in the North West had resulted in acquittal, after the Centralia shooting nearly all resulted in convictions with sentences of from one to fifteen years for membership in the I.W.W.

In October, 1920, the United States Circuit Court of Appeals upheld the decision of Judge K. M. Landis of August, 1918, in finding some 40 members of the I.W.W., including William D. Haywood, guilty of conspiracy to overthrow the government. The verdict carried with it long

prison sentences for all the men. The superior court passed upon the question of the sufficiency of the evidence introduced at the trial, and declared that it was enough on which to base a verdict.

Accurate figures regarding the membership and increase or decrease of I.W.W. memberships are lacking.

INFLUENZA. This affection re-appeared in the United States, chiefly in the Middle West, about the middle of January, 1920. Up to that period the mortality both from influenza and pneumonia had been unusually low. In Chicago and Kansas City there was a sharp increase in these mortalities on January 17, indicating that influenza had reappeared. In 32 of 36 large cities the disease was soon apparent. A high point was reached in two to three weeks after which the disease slowly declined. Aside from the Middle West the influenza appeared in California, Connecticut, and New Jersey. While on the whole the epidemic ranked as mild with low mortality in several cities of the Middle West it was higher than at any time since the Fall of 1918. During the Fall of 1920 there has been no notable outbreak of the disease, which may reappear early in 1921 according to precedent. The disease in these winter epidemics has little or nothing in common with the pandemic of 1918 for we have had these annual winter visitations since the pandemic of 1890 and in certain localities like Minnesota for a much longer period. In New York City there were practised many immunizing vaccinations against acute pulmonary diseases during the period Sept. 30, 1919, and April 3, 1920. In the brief flare up of influenza in the metropolis in January the vaccinated presented but a slight advantage over the unvaccinated in the case of influenza victims, but the disease was as a rule very mild. While Pfeiffer's bacillus, one of the germs able to cause influenza of the ordinary annual winter type and the supposed cause of the pandemic of 1890, was excupated in connection with the pandemic of 1918 it has recently been shown that it can cause a very deadly form of purulent meningitis in children. This affection fortunately does not prevail in epidemic form. Of 158 cases reported by the Health Department but 12 recovered. The affection has been termed influenzal meningitis, a term somewhat misleading because other organisms which cause influenza also are known to cause meningitis. See MENINGITIS.

INSANITY. In the *New York Sunday World* for November 19 appeared a symposium on insanity by three New York alienists, Drs. Kirby, Brill, and Timme, on various problems in the care and cure of the insane. The former would do away with the term insanity for that of "civil disability due to mental illness." There are many who are technically insane, yet not disabled civilly. The insane who are under restraint, some of whom are mistakenly interned, have had their civil status changed by law, legal process being required for committal. There is a large element of relativity involved for according to Dr. Kirby, Joan of Arc might be legally interned to-day although 600 years ago visions, hallucinations and systematized delusions were not thought incompatible with sanity. One of the most interesting problems of the day is the influence of statutory prohibition on the number of insane commitments. At present these are diminishing, but the decrease began as far

back as 1909. It has been claimed that the chronic alcoholic addict is diseased to begin with and that alcoholic insanity is apt to appear in some other form. Although Kirby does not mention any equivalent we have recently read of a considerable increase of suicide, and believe that will prove to be one outlet for the mental illness which conduces to alcohol addiction. The most common form of insanity at present is precocious dementia, for it constitutes a fourth of all admissions. The causes are unknown and the outlook very bad. The beginnings are often apparent in the peculiar personality of the child. The symptoms show infinite variation, but all point to a failure in mental power without any of the compensation seen in merely unbalanced people. The beginnings are most difficult to detect amid the erratic behavior of the adolescent individual. The best way to hold the disease in check is occupation treatment. The next most important type of insanity is the manic-depressive, which is essentially recurrent, which is not attended by dementia and which includes the most violent mania and the opposite state of melancholia, but not necessarily in the same patient. In the intervals between attacks the subjects are quite normal and attend to their affairs and many have but one or a few attacks in a lifetime. Their insight into their condition may be so sane that they voluntarily seek restraint. It is not easy to determine whether the study of the occult can unseat the reason of a normal subject as many who take up these studies are already unbalanced.

Dr. A. A. Brill takes up the cure of a certain class of subjects on the border line of insanity by psychoanalysis. He admits that this resource is of no benefit to the actually insane. This being conceded, further discussion of the subject is unnecessary in this connection. Brill, however, discusses certain aspects of insanity. He believes that Prohibition will lessen the commitments, but will leave at large many subjects whose mental ill health originally led them to drink and who must now seek some other outlet. He does not mention suicide in this connection. To return to psychoanalysis Brill is of the mind that it is of value in the prevention of insanity in special cases. But few psychiatrists make use of the method because of its exacting character and the time required to analyze a patient.

Dr. Timme discusses chiefly the possibilities of internal secretions in the cure of insanity or rather arrested mental development. The latter furnished the original indication for this kind of treatment because due at times to anatomical defect of a kind which could be made good in this manner. But it has further possibilities, for a few undoubted cases of precocious dementia have responded to treatment. This is as far as we have advanced in the treatment of genuine insanity. As in the case of psychoanalysis there are borderline cases which are favorably influenced, including especially those dependent on some anatomical or functional defect which can be made good in this manner.

INORGANIC CHEMISTRY. See CHEMISTRY.

INSECTS. See ZOOLOGY.

INSTITUTE OF INTERNATIONAL EDUCATION. See INTERNATIONAL PEACE AND ARBITRATION.

INSURANCE. Among the chief features of the year 1920 was the extraordinary growth of

the insurance business. In almost every class with the exception of marine insurance, the premium income increased as never before. There was an increase in the new business of legal reserve life insurance companies of over 20 per cent, as compared with 1919 which itself was an exceptionally heavy year. The new business amounted to nearly \$10,000,000,000. There was in consequence a great increase in the liabilities during the year and the gains for increased income were largely neutralized. There were heavy losses in many classes of insurance, especially in fire insurance, burglary insurance, and automobile insurance. In general, conditions were abnormal although in certain classes of insurance which yield a relatively small amount of premiums they were not far from normal. A feature which created much interest in 1919, namely insurance against risks of riot and civil disorders, lost its appeal to some extent in 1920 and although a considerable proportion of old business was renewed, the new business was less than had been expected. Aviation insurance was reported as developing but had not yet become an important factor. It was reported in insurance circles that the presidential campaign created less interest than such campaigns usually do and interfered less with business. In general the practice of carrying insurance seemed to have increased during the year. See the article FIRE PROTECTION.

LIFE INSURANCE. The 62nd annual report of the superintendent of insurance of the State of New York showed that there were 37 life insurance companies doing business in that State, Dec. 30, 1918, including 14 New York State companies and 23 companies of other States. The total assets were \$6,096,788,789; liabilities, \$5,825,223,147; total premium income, \$1,011,956,808; amount of insurance in force, \$29,712,083,607.

FIRE AND MARINE INSURANCE. There were 282 fire insurance companies and 25 marine insurance companies doing business in New York State at the close of the year 1918. The assets of the fire insurance companies were \$1,213,409,109; liabilities \$885,531,849; total premium income \$722,743,654; insurance in force \$102,171,442,951. The assets of the marine companies were \$54,448,472; liabilities \$37,160,033; total premium income \$28,690,075; insurance in force \$1,604,969,674. Of the fire insurance companies 55 were of the State of New York, 162 of other States; and 65 of other countries. Of the marine companies 6 were of the State of New York; 2 of other States; and 17 of other companies. See FIRE PROTECTION.

CASUALTY, FIDELITY, SURETY, and CREDIT INSURANCE. Of this group of companies the premiums written in 1919 were \$302,625,221, an increase over the previous year of \$46,474,156. The premiums on workmen's compensation during 1919 were \$33,991,868 as compared with \$31,730,842. In casualty companies, the assets were \$435,655,717; liabilities, \$376,880,262; total premium income, \$328,822,895; insurance in force, \$3,147,053,000.

FRATERNAL. Hundreds of fraternal societies are scattered throughout the country, but are of a distinctly local nature and statistics were not available. The New York Superintendent of Insurance issued a report covering 12 societies operating in that State. Down to the close of the year 1919, they showed combined assets of

\$220,533,402; liabilities \$90,274,089; total premium income \$100,336,046; insurance in force, \$6,805,830,870.

TITLE INSURANCE. In the year ending Dec. 31, 1919 there were 11 title insurance companies with assets of \$128,828,064; liabilities \$96,626,326; total premium income, \$2,840,-825.

INTERCHURCH WORLD MOVEMENT.

The process of closing up the affairs of this organization was carried on during 1920, and it was expected that this would be complete early in 1921. The headquarters of the Movement are at 45 West 18th St., New York City.

INTERNAL COMBUSTION ENGINES.

The most interesting developments in this field during 1920 probably were in the application of the Diesel engine to marine engineering, though the actual number of stationary Diesel engines ordered in the United States far exceeded those designed for ships. There were 144 stationary Diesel engines sold during the year for use in oil pipe lines, small central stations, and mines, as well as in irrigation at chemical works and ice plants. The range of these units was from above 1000 horsepower, a capacity several American manufacturers were able to provide, down to 75 horsepower. Considerable economy was shown in the smaller types especially when used in ice and lighting plants.

In Diesel marine engines, however, American manufacturers produced units of greater capacities in both two- and four-stroke-cycle types. One novelty of the year was a 2700 horsepower two-stroke-cycle Diesel engine of purely American design. A 2400 indicated horsepower four-stroke-cycle marine Diesel engine, the largest of this type to be built in America, was also constructed during the year. It was announced at the end of 1920 that there would be a material increase in the number of ships under the American flag on which Diesel motors were installed. Two large freighters were being constructed for the American-Hawaiian Steamship Company, while for the Alaska Steamship Company a motor tanker was under construction at the Tacoma plant of the Todd Company. The Shipping Board was equipping the *William Penn*, a large freighter, with a Diesel plant purchased by former Chairman Edward N. Hurley in Denmark, and had sold a number of the Diesel engines which were built in the United States and designed for the 5350 submarine-evading cargo boats, although the hulls for which were never laid down. The Bethlehem Shipbuilding Corporation had evolved a Diesel engine which won the commendation of Charles M. Schwab.

The oil engine undoubtedly had certain advantages over the older reciprocating engine and the steam turbine, but a number of reasons accounted for its limited use on American ships. Those of the Shipping Board were said to be unsuited for Diesel propulsion, while for those in service the cost of replacement would be large for ships in service.

During the year American marine engineers were endeavoring to develop a new type—a combination of the Diesel with the electric drive, in the hope that this kind of propulsion would be more economical than the full Diesel engine. In this system a Diesel engine would furnish the power to drive the generator, which would supply current to motors turning the propellers. It was stated at the end of 1920 that some of the

best minds in American marine engineering were working on this combination.

Internal combustion engines were attracting attention from marine engineers the world over and practically all the great shipbuilding concerns had begun the construction of internal combustion motors. An addition to the list was the Wallsend Slipway & Engineering Company, Ltd., which in 1920 acquired a Sulzer licence, being the fourth marine engineering firm in Great Britain to adopt this type of motor, the other three companies being Sir W. G. Armstrong, Whitworth & Co., Ltd., and Alexander Stephen & Sons, Ltd. During 1920 there were about 170 vessels representing some 495,000 tons under construction while 24 ocean going motor ships were put into commission during the year. See SHIPBUILDING.

Among the types of oil engine under construction in the United States in 1920 was the solid- or pressure-injection oil engine, a type having advantages of simplicity and low manufacturing cost. In size it ranged between the Diesel type, whose economy it approached, and the surface ignition or semi-Diesel type. Units of this design as large as 1000 horsepower were being anticipated. The surface ignition engine in 1920 both as regards numbers and total horsepower was the most utilized in America of any of the types of oil engine. It was simple in construction and operation, and could be used with special advantage where the demand for power was small or seasonal, as in the case of irrigation plants and oil field pumping stations. Units of this type were increasing in size, being built in 1920 by several works up to 300 horsepower. Water injection was eliminated, compression pressures were increased, reaching in some cases 250 pounds per square inch or similar to that of solid injection engines.

Where there was available coke-oven or blast-furnace gas the gas engine naturally found application, though on account of the decline in the natural gas supply there were fewer gas engines installed for industrial purposes. However, for existing power plants a number of producers were built so that the engines could operate on producer gas. Developments in this field were anticipated especially where anthracite or lignite producers could be installed. Gas engines also were installed during the year in casing head gas plants and elsewhere in the oil fields.

An interesting development of the year was the use of an internal combustion engine as a prime mover in a locomotive of large size in England. This machine was under construction as was also one in Switzerland and detailed descriptions of their design, construction and performance were awaited with interest by engineers. See AUTOMOBILES.

INTERNAL SECRECTIONS. This subject is also touched on under DIETETICS and DISEASE. A recently issued number of the *Journal de médecine et de chirurgie pratiques* is devoted solely to Opothrapy or the medicinal use of internal secretions. Since it is at times very difficult to prescribe the latter to the best advantage, special diagnostic measures are becoming more and more utilized. According to the reaction of the subject to a test dose of a secretion or to one of the active alkaloidal drugs, it is often possible to select the particular secretion and dose demanded and also to avoid giving a drug or dose

which is not demanded. In health the organs of internal secretion as the thyroid, suprarenal glands, etc., in response to the needs of the economy pour out certain quantities of their secretion. If the gland sustains a severe pathological alteration and becomes unequal to its tasks other glands may substitute for it; but in general the idea that treatment with these glands consists in mere substitution of something lacking in the economy is only one aspect of the case. Without any anatomical change these organs may pour out too much or too little of their proper secretions, not because of any intrinsic fault, but because of the action of the nervous system, or some other extrinsic factor. The subject instead of being, as formerly thought, relatively simple is really extremely complex. Moreover it is unusual to find one gland acting badly while the others are normal. To a large extent the entire system of these organs behaves as a unit. Not only may several of them be affected simultaneously from a common cause, but a derangement of one may react on several of the others. The exact number of these secretions is unknown, but is very large, although some are of far more importance than others. Several of them appear to form a special system within a system, known as the chromaffins. The part played by them in growth and after growth has been attained in the personality or individuality is enormous. There is at present no material way in which we can explain why one man should possess enormous psycho-physical energy while another with the same inherited equipment and nourished with the same food should be sluggish mentally and physically, save through the habitual behavior of the internal secretions. In like manner the differences between the most masculine of men and most feminine of women lies entirely in the differences in internal secretions. By grafting experiments it has been possible to change an effeminate to a masculine type of man and so slight a factor as a tumor of the suprarenal gland has been sufficient almost to change the sex of a woman, about 30 of these cases being now on record. The subject of grafting the interstitial sex glands of the male into elderly men in the hope of rejuvenation has been active for the past eight years and has given promising results, but at present it seems that a slight operation without grafts performed on the subject himself may bring about the same result and at the time of writing attempts are being made to commercialize this operation on a large scale.

An analogous subject may some time play a great rôle, but at present it is not even thinkable. Removal of the male sex glands as is well known makes of the subject a very defective biological unit who derives not a single advantage from this mutilation. Our knowledge of the corresponding operation on young girls is very slight and almost limited to the practice as carried out in India. In the brief account of the future of these women it appears that although unsexed they are great gainers in all other respects. They have all of the strength and endurance of the best men and are free from minor ailments, enjoying the best of health. Centuries hence there may be reasons to justify this operation which are at present unthinkable.

INTERNATIONAL COÖPERATIVE ALLIANCE. The Coöperative Movement showed during the year 1920 a definite return to the

international spirit which characterized it before the war, and which was replaced during the period 1914-1919 by a rapid growth of national consumers' societies. That this spirit was not lacking even during the war, is shown by the fact that during the greater part of the time, the official bulletin of the International Coöperative Alliance continued to be published in the three official languages, English, French and German, and that yearly conferences were held, with delegates from the consumers' societies of the Allied nations, to discuss the problems of international distribution, food supply and exchange. (See YEAR BOOK for 1918 and 1919.) In 1920, however, for the first time since 1914, there were official meetings of the Central Committee of the International Coöperative Alliance, one at Geneva in April, and the second at The Hague, in October, to which Great Britain, Belgium, France, Denmark, Finland, Germany, Holland, Hungary, Russia, Switzerland, Czecho-Slovakia, Ukraine, Georgia, Prague, and Lithuania, sent delegates. The committee decided in accordance with the arrangements of the Glasgow Congress of 1913, to resume the International Congress of the Alliance in 1921, and to hold it at Basel. A programme was outlined for this Congress covering policies of international coöperation, international peace, the League of Nations, and the International Labour Bureau, as well as topics more directly concerned with the organization and development of the I. C. A. At the same time, meetings were held of representatives of Coöperative Wholesale Societies to discuss the formation of an International Coöperative Wholesale Society. Coöperative production, although it exists on a large scale in Great Britain and on the Continent as an outgrowth of coöperative distribution, and is increasing every year, has not yet developed to the point of organizing an international society apart from the I. C. A.

The most striking advance of the year outside the official coöperative organizations, was the establishment of a Coöperative Section of the International Labour Bureau, under the League of Nations. This section has recommended to the governments of all nations in the League, the representation of the consumers' interests, through the Coöperative organizations of consumers, at the next International Labor conference.

GREAT BRITAIN. The coöperative societies of Great Britain now have a membership of four million families, or over one third of the total population. The membership increase has during the last forty years maintained a ratio of five to one as compared with the increase of population in the Kingdom. The sales for the half year ending June 1st, 1920 showed an increase of 24 per cent over the corresponding period for 1919 according to the report of the Coöperative Wholesale Society, which now distributes over a billion dollars worth of commodities to its members each year. The extent to which this society of consumers has itself become a producer is indicated in the value of the supplies from its productive works, which amounted to nearly one hundred million dollars for the half year and showed an increase of 35½ per cent over the corresponding period for 1919. The C. W. S. owns and operates the largest flour mills and the largest shoe factories in Great Britain, and produces a total amount of commodities five times greater than that of the pri-

vate manufacturers in the Manufacturers' Association. The trade department showed a loss during the first half of 1920 of nearly half a million dollars, after expenses of production and distribution, interest on share and loan capital, and depreciation of property, had been met. This loss was paid from the reserve fund, which itself was increased by the refund of three and a half million dollars of excess profits tax. The Corporation Profits Tax, a 1920 revenue measure, exempts only such part of the profits of coöperative societies as it actually returned to members in the form of dividends or savings-returns. This tax was bitterly protested by the C. W. S. which maintained "that the result of their mutual trading, the distribution of goods which they collectively buy and sell for convenience at current prices, cannot result in anything in the nature of a commercial profit." The banking department reported an increased turnover of 26½ per cent over the corresponding period of 1919.

In 1918, British coöperators formed the Co-operative Party, to secure direct representation of coöperative interests in Parliament. Thus far, only one member, Mr. A. E. Waterson, had been returned by the Party, but its candidates showed considerable strength at two important by-elections during 1920. Reports show about 180 definitely organized local coöperative parties, and subscriptions, which in 1919 were received from 532 societies, were received in addition from 50 new societies up to September 30th, 1920.

RUSSIA. The year 1920 in Russia completed the taking over of the coöperative organizations by the state. Although coöperation was slow in starting in Russia as compared with other European nations, on account of the opposition of the imperial government, the war brought an immense increase in the number and extent of these societies, until in 1918 they included one hundred and fifty million people, united in the production and distribution of almost all the necessities of life. The Moscow Narodny Bank (People's Co-operative Bank), a joint federation of local credit unions and consumers' and peasants' agricultural societies, had in November 1918 a capital of one hundred million roubles, and deposits amounting to six hundred million roubles. In September 1918, a Coöperative University was opened at Moscow, to train workers for the Co-operative movement.

The Soviet government, immediately upon its accession to power, took steps to control the co-operative societies. In April, 1918, membership in a co-operative organization, which according to the principles of the movement had been entirely voluntary, was made compulsory. A year later, all coöperative societies, stores and productive agencies were consolidated by governmental decree into a nation-wide Consumers' Commune, the control of which is vested, not in the consumers, but in those persons entitled to vote in the Soviet elections. Finally, in 1920, the property of the societies, including the agricultural societies and the Moscow Narodny Bank, was made the property of the government, which through the votes of its own members on the board of directors, made the action appear a voluntary one on the part of the organization. The few remaining original directors on the board protested bitterly against this action, and denied the right of the majority of the board to represent Russia in the councils of the I. C. S. The Soviet members of the board, on the other

hand, maintained that their action was the inevitable result of the socialization of the state, when products become the property of the whole community, and buying and selling, as they are understood under capitalism, disappear.

BELGIUM. The membership in coöperative societies in Belgium in 1920 was 350,000, and has shown a steady increase, even during the worst years of the war. The money turnover has also increased. The coöperative movement in Belgium is the only one of the national movements which is definitely adherent to a political party,—the Belgian Labor Party. Of the 70 Labor members of the Belgian parliament, 64 were members, administrators or directors of coöperative societies. Four government portfolios were held by coöperators.

AUSTRIA Since the revolution and the consequent withdrawal of the non-German societies, the Austrian coöperative societies have fallen into three groups: The Union of Distributive Societies, the Union of Productive and Economic Societies, and a group of miscellaneous smaller societies that have not joined either of the unions. The Austrian societies have not only helped meet the financial depression by advancing credit to their constituent societies, but have also aided the government in meeting the food shortage by issuing supplies to other than its own members.

FINLAND. Finland, where coöperation is very strong, shows for the year 1920 a total turnover in its coöperative societies of nearly \$250,000,000. There are 65 coöperators among the 200 members of the Finnish Diet. A permanent Coöperative Business Training School was opened in October, 1920, with a two-year programme for the education of coöperative managers.

FRANCE. In May, 1920, two large coöperative federations in Paris were consolidated, making a society with a subscribed capital of more than five million, five hundred thousand francs, and a yearly turnover conservatively estimated at ninety million francs. Government subsidies to coöperative societies, which have been a practice in France for a number of years, have been continued, especially to societies in the devastated areas. The figures for 1920 were not available, but those for 1919 showed that already the societies in these areas are making efforts to repay the loans.

GERMANY. Germany in 1920 had 3,000,000 members of consumers' societies doing a trade of one billion marks. Another three million were members of banking, agricultural, producers' and dwelling associations. On January 1st, 1920, there were 40,635 registered industrial and provident societies as compared with 38,023 in 1919.

ITALY. In Italy the Coöperative movement has thrown in its fortunes politically with the Socialist party, which is taking an active part in the work of economic reconstruction. Coöperative trade-unions of builders, contractors and day laborers are more developed in Italy than elsewhere. The coöperative banks assisted the workers who seized the factories and attempted to operate them on a co-partnership basis. The total turnover of Italian coöperative industry for 1920, estimated on the basis of the figures for the first part of the year, was \$400,000,000.

NORWAY, SWEDEN AND DENMARK. Norway had, at the beginning of 1920, 295 societies with 70,984 members in the Norwegian Coöperative Wholesale Society. The turnover showed an increase

of some five million dollars over that of the preceding year. Sweden had nearly three times as large a society, in members and turnover, as Norway. Denmark has developed coöperation to a greater extent than almost any other country. Figures for 1920 were not available, but those for 1919 showed that the Danish Coöperative Wholesale Society doubled its turnover, in that year, and that the Coöperative Bank, with outstanding loans amounting to \$2,000,000,000, was probably the strongest single factor in putting agriculture back on a normal basis.

OTHER EUROPEAN COUNTRIES. The splitting up of the Austro-Hungarian monarchy resulted in the establishment of separate coöperative organizations in Hungary and Czecho-Slovakia. The General Distributive Society at Budapest had a membership in 1919 of two hundred thousand and did a trade of two hundred million crowns, and in 1920 these figures were doubled. The Czecho-Slovakian societies united with a wholesale at Prague, which had in 1919 a trade of one billion, three hundred million crowns.

Holland and Switzerland are active in the Co-operative movement, and in Spain and Portugal, the coöperative societies, though small, are active and growing.

UNITED STATES. American coöperation has been hindered by the lack of a central society through which to compare methods, to check up unsuccessful and spurious forms of coöperation, and to educate members and workers in the movement. This need has been met this year through the Coöperative League of America, formerly a temporary organization, but now established as the national central educational organization, by the action of the Second American Coöperative Convention. This convention, which met at Cincinnati, November 11-14, 1920, had 62 delegates from 19 states, representing 279 coöperative societies with a membership of 84,000. In addition, there were 44 fraternal delegates from Trade Unions representing two million members, other fraternal delegates from educational and religious organizations, and many visitors, students and individuals without credentials. This convention, as a step toward better organization, recognized only voting delegates from coöperative societies, and through these delegates, adopted a constitution creating "an organization of the consumers coöperative societies of the United States for education, standardization and national unity." Two whole sessions of the conference were given over to a discussion of the methods of the National (Wholesale) Coöperative Association of Chicago, and the Pacific League, which were represented, contrary to the policy of co-operative societies, by delegates who were also paid employees. After listening to three member delegates from societies organized by the National Coöperative Association, the conference voted to return the credentials of its delegates, and endorsed a resolution advising coöperative societies not to affiliate with the Pacific Co-operative League so long as it continued its present management and methods. The conference elected a board of fifteen directors of the Coöperative League of America, with an Executive Board to carry on the intensive work of the League. Its headquarters are at 2 West Thirtieth Street, New York City. It has been impossible to measure the extent of the coöperative movement in the United States, on account of the large number of small independent societies

through which it worked. It is estimated, however, that there are 3000 true coöperative distributive societies, and 12,000 agricultural producers societies. At least 300 new societies are being organized each year. The movement is now conservatively estimated to have 500,000 members.

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INTERNATIONAL INSTITUTE OF AGRICULTURE. See AGRICULTURE.

INTERNATIONAL LANGUAGE. Throughout the year the controversy on the subject continued. The advocates of *English*, however, were confidently letting things take their natural course. The advocates of *French* did not miss many occasions to point out to the world the traditional rights of their tongue; and particularly they saw in the present prestige of France in world's politics an occasion to reinstate French as the only diplomatic language (the English and the French being both recognized as "official texts" for the Treaty of Versailles; see Article 440 of said Treaty). M. Branting, a Danish scholar, and a member of the Stockholm Delegation to the Peace Conference, points out the discrepancies of the two texts. Cf. also A. Gérard, *Revue Bleue* 13 mars 1920, "*L'importance de la langue française dans les relations diplomatiques*." The French have, moreover, scored a success in the field of scientific researches; French having been adopted as the international language by the Union Internationale des Académies—which embraces all the great Academies of the allied, associated, and neutral countries. (*L'Opinion*, Dec. 4, 1920.)

Nothing striking was published during the year by the adepts of the *Projet Chappelier*.

As to the advocates of the auxiliary and artificial languages they are steadily keeping up their efforts hoping for ultimate success. At the Assembly of the Delegates of the International Union for Peace, which met in Basel, May 22-24, the following resolution was adopted: "*Auxiliary languages*—without taking sides, the committee invites the Pacifists who are partisans of an international language to enter the societies which are concerned with that question and to work in favor of peace."

Esperanto has been officially adopted by the Soviet government of Russia—which may do the cause of *Esperanto* infinite good or infinite harm according to what the future political world holds in store for us and *Esperanto* has been rendered obligatory in all schools. Barbusse, the author of *Le Feu* and now an adherent of Sovietism, proposed *Esperanto* as the International Language at the international congress of the Anciens Combattants, in Geneva, Switzerland, early in 1920. Pressure has been brought to bear on the League of Nations, but the admission of the Soviets and of the communists of Barbusse's stamp may prevent success there for a long time to come. The *Ido* Society was working with enthusiasm. Offices in America: 1059 Mohler Street, Pittsburgh, Pa. They have on the market a series of books; the most condensed exposition of the language costs four cents; a grammar, 12 cents; the exhaustive textbook, \$1.40; and they have three magazines. The *Esperantists*, or *Antidists* seem not to have gained footing on American soil yet; at least no organization has been formed. A handy little textbook has been issued in 1920, *La Langue internationale Espérantide, en quatre semaines*, by Chenevard, Neuchâtel (61 pages). Their review, *Internacia Lingvo Esperantida* is flourishing.

At the last meeting (Dec. 18) of the first Congress of the League of Nations in Geneva (1920) some one proposed to discuss *Esperanto* as the International Language. Then M. Hanotaux, of the French Academy rose, said that there were other questions more pressing, warned against haste, and for the present claimed the rights of the French language. There was practically unanimous applause.

INTERNATIONAL PEACE AND ARBITRATION. AMERICAN PEACE SOCIETY. In his annual report the Secretary (Arthur Deering Call, Colorado Building, Washington) said that the work of the Society, continuing through the World War, not only survives, but is beginning again to thrive. Inquiries from centres of former activities indicate a reawakening of interest. The New Hampshire Peace Society is increasing its effort in behalf of a greater international community of interests, especially among the young people of the Americas, and also between students of this country and those of Europe, including Germany. The National Council of Women has a section studying again the problems of peace and war. Other groups of women are taking up again the strands where they were left when we entered the war. Notwithstanding the marked increase in the cost of paper and other complications in the printing trade, the *Advocate of Peace*, with the assistance of George Perry Morris, has been published regularly and its size increased from 24 to 32 pages. There has been an increasing number of articles from across seas indicating a return to the hopes of the American Peace Society. There have been

a number of requests from abroad, especially from Austrians, for financial help. The renewed interests of the New York Peace Society, the increased activities of the American Union against militarism, the publications of the World Peace Foundation, especially of the Carnegie Endowment for International Peace, are also indications of the change of public sentiment toward this long established movement for an international peace. Press and periodicals are opening their columns more and more to those things for which the American Peace Society stands. The war psychology of the nations Mr. Call declares is giving way once more to the psychology of peace.

The Bureau Internationale de la Paix, with headquarters at Berne, is taking up again its tasks. Documents received tell of its work with the peace societies constituting the international union; of its Assembly of Delegates meeting in Baskem May 22, 23, 24, 1920. There is also an active movement in Germany headed by such persons as Dr. Hans Webberg, Professor Dr. Alfred Manes, Maximilian Müller-Jabusch, a group of scholars which is issuing books and pamphlets, not only for the purpose of rectifying certain provisions of the Treaty of Versailles, but also for the purpose of promoting the organization of some sort of a League of Nations. L'Association de la Paix par le Droit continues its efforts in behalf of progressive substitution of arbitration for war in international relations. Its monthly is *Le Paix par le Droit*, edited by Th. Ruyssen, J. L. Puech, Charles Richet, J. Prudhommeaux, Jacques Dumas, and others, published regularly. The *Arbitrator*, monthly organ of the International Arbitration League, founded by William Randall Cramer in 1870 under the secretaryship of F. Madison, London; the *Herald of Peace*, organ of the Peace Society founded 1816, Sir John Pease Fry, president, and Rev. Herbert Dimmick, secretary; new documents from the National Peace Council of England, M. H. Huntsman, assistant secretary; *La Vita Internazionale*, under the direction of D. Rosetti and S. E. A. Agnelli at Rome, the magazine founded by E. T. Moneta; the *Japan Peace Movement*, monthly organ of the Japan Peace Society and the American Peace Society of Japan; the publications of the Swiss-Dutch Bureau Pax; the publications of the various League of Nations Unions; the many other publications typified by the periodical review, *Pax per Fœderationem*, published at Sofia by the Peace by Federation Society, *Le Drapeau Bleu*, a review of international studies published in Paris; these are some of the indications abroad of a re-development of hope, interest and consecration to the cause of international peace.

A constant subject of study is the extension of the work of the Society. Its Secretary is of the opinion that two lines of extension are now open to the Society, one the development of the *Advocate of Peace* into an international monthly of a much wider influence; second, an increasing publicity, especially among newspapers and magazines.

In the midst of the controversy over the League of Nations, the Secretary of the Society, who is also the editor of the *Advocate of Peace*, was obliged to formulate and to express as best he could the views of the American Peace Society. In the absence of any means of ascertaining the average of the views of the entire membership, he was forced to ascertain and to express those

views after conference with a comparatively few only. In his report he said: "It may be added, however, that this has been done only after the most painstaking study possible to him of the history and purpose of the Society. Those views thus ascertained have appeared from month to month in the *Advocate of Peace*. . . . He has believed, and he now believes, that the views as he has tried to express them in editorials, in other writings, and in public speech, are the views consonant with the spirit of the men who have gone before in the service of this aged society. Out of the year just passed, its confusion of ideas, its unhappy struggle between the legislative and executive branches of the American government, he thinks he sees clearer than ever before the vitality, strength, and abiding veracity of the principles pleaded for and consistently upheld since those epic days of William Ladd. . . . The principles of the society have not been assailed, much less successfully contradicted. They are the expression of a constructive foreign policy, be it for America or other state. They represent the epitome of all that America has achieved in its political history. They are the enduring substructures of any adequately governed world."

Those are the principles upon which men, when once they know, can agree. They are the things upon which men do agree increasingly. The Republican Party of the State of New York has adopted those principles as its plank for a foreign policy. The men who made that platform are to have an influential voice in the platform of the National Republican party. Prominent candidates for the presidency, Governor Lowden, Senator Johnson, Nicholas Murray Butler, have spoken favorably of all or a part of those principles. Democrats favor them. The American Institute of International Law adopted them. The American Peace Society has adopted them. Avoiding the difficulties, real or imaginary, feared by the opposition in the Senate to the Covenant of the League of Nations, particularly the dangers inherent in any international organization with power to coerce by force of arms its will upon unwilling states, also in the nest of threatening controversies arising out of the proposal to perpetuate the inequality of states, these principles advertised and argued for by this Society constitute the very essence of your Secretary's labors during the year just ended. Therefore, they include the sum and substance of his Annual Report.

At the annual meeting held May 29, 1920, at Washington, the following officers were elected:

President: Hon. Andrew J. Montague, Member of Congress from Virginia, Washington, D. C. Secretary: Arthur Deering Call, Treasurer: George W. White, President of National Metropolitan Bank, Washington, D. C. Vice-Presidents: Hon. James L. Slayden, Member Council Interparliamentary Union, San Antonio, Texas. Hon. Jackson H. Ralston, Lawyer, Washington, D. C.; Hon. Theodore E. Burton, former President American Peace Society and Senator from Ohio, Cleveland, Ohio; Hon. William Jennings Bryan, Lincoln, Nebraska.

AMERICAN SCHOOL CITIZENSHIP LEAGUE. The name of the American School Peace League was changed in January, 1920, to American School Citizenship League. This has not changed the objects of the League, but the new name, with the object "to develop an American citizenship

which will promote a responsible world democracy and a real cooperation among the nations," was considered to describe more accurately our line of work. During 1920, it issued "An Eleven-Year Survey of the Activities of the American School Peace League" and "A Reconstruction Programme," the latter stating our chief lines of activity. The Annual Prize Essay Contest was conducted as usual. It was open to seniors in high and normal schools in Great Britain as well as in the United States. The subjects of the essays were: Normal School Set—"Education for Citizenship in the League of Nations"; Secondary School Set—"The Most Effective Methods of Securing Cooperation as against Competition between Nations." The prizes were as usual, \$75, \$50, and \$25 for the three best essays in each set. Successful contestants in Seabury Prize Essay Contest, 1920. Normal School Set: First Prize—Miss Ruth Dunham, State Normal School, Danbury, Conn.; Second Prize—Leo R. McKinnon, State Normal School, Salem, Mass.; Third Prize—Miss Edna R. Doane, State Normal School, Hyannis, Mass.; First Honorable Mention—W. R. Anderson, State Normal University, Normal, Ill.; Second Honorable Mention—Miss Rebecca Lumiansky, State Normal School, Hyannis, Mass. Secondary School Set: First Prize—J. H. Brown, Cheltenham College, Pilton Lodge, Weymouth, England; Second Prize—Miss Grace M. Tull, State Normal School, Preparatory Dept., Townson, Md.; Third Prize—Oliver E. Schafer, Masten Park High School, Buffalo, N. Y.; First Honorable Mention—David W. Palmer, Wendell Phillips High School, Chicago, Ill.; Second Honorable Mention—Miss Cornelia A. Wilson, State Normal School, Preparatory Dept., Townson, Md.; Third Honorable Mention—Miss Iva E. Turner, Oak Grove Seminary, Vassalboro, Me.

The annual convention was held as usual with the National Education Association in Salt Lake City.

The Secretary of the League, Mrs. Fannie Fern Andrews, attended the Convention of the Department of Superintendence of the National Education Association in Cleveland the last of February, where she gave several addresses and held conferences with leading educators in regard to the League's work, especially its Course of Study in history, which is being published for the League by Charles Scribner's Sons. This course, with Type Studies, will be published in five volumes. This is for the elementary grades, and it is one of the most important pieces of work, if not the most important, which the League has accomplished since its organization. The League's "Course in Citizenship and Patriotism," for elementary grades, published by Houghton Mifflin Company, continues to win favor among the educators of the country. A large number of school systems throughout the country have adopted this course.

CORDA FRATRES. The work of the year 1920 of Corda Fratres Cosmopolitan Clubs was started by the convention held in the last days of December, 1919, at Syracuse, N. Y. About 40 delegates were present from the various chapters. The Syracuse Chapter had made great effort to have the best available speaking material for the convention. The convention was notable for a number of new undertakings which promise to make the Association an effective force when they are worked out. One of these was the plan to raise a five-year budget sufficient to pay the expenses

of a full time field secretary, together with the expenses for a number of new enterprises by which it was hoped to increase the effectiveness of the movement both within the clubs and outside of them. As yet, however, the committee in charge of organizing the budget campaign has not succeeded in its work, so that the final impetus remains for this convention. Also the man around whom the plan was built, Dr. George Nasmyth, died during the summer in Europe while on a mission of organizing the Cosmopolitan movement there. His death was a great loss to the movement, to which he was devoted and looked forward to making it his life work if it could be organized so as to make such a plan possible.

During the year a Summer Institute was held in Michigan, in a very small way corresponding to the Y. M. C. A. conference at Geneva. It is hoped by its supporters that this will be a start for other conferences with a greater attendance. The Chicago Women's Chapter had charge of raising money for Dr. Nasmyth's work in Europe, an arduous task well performed. The Women's Chapter at Syracuse had charge of editing and publishing the Association magazine, *The Cosmopolitan Student*. Several new clubs have been added as chapters, at the universities of Virginia, Florida, Kansas, Cincinnati, and the Georgia Tech., and Dennison University. The 1920 convention was at Ann Arbor on December 27th-28th-29th.

LIST OF COSMOPOLITAN CLUBS, NOV. 1, 1920

- Cosmopolitan Club of the University of California, c/o Miss Ruth Van Pelt, Cor. Sec'y, 2017 Lincoln Street, Berkeley, Cal.
- Cosmopolitan Club of Carnegie Institute of Technology, c/o Mr. Paul J. Svabek, Cor. Sec'y, 317 Millin Avenue, Wilkesburg, Penn.
- Cosmopolitan Club of the University of Chicago, c/o Prof. Ernest W. Burgess, Harpers Hall, University of Chicago, Chicago, Ill.
- International Club of the University of Chicago (Women's Chapter), c/o Prof. Ernest W. Burgess, Harpers Hall, University of Chicago, Chicago, Ill.
- Cosmopolitan Club of Coe College, c/o Marguerite Austin, Vorhees Hall, Cedar Rapids, Iowa.
- Cosmopolitan Club of Cornell College, Mt. Vernon, Iowa (no correspondence for a year).
- Cosmopolitan Club of Cornell University, c/o L. K. Elmirst, Pres., The Cosmopolitan Club, Ithaca, N. Y.
- Cosmopolitan Club of Drake University, c/o Miss Margaret Garrett, Sec'y, 1124 27th Street, Des Moines, Iowa (last year's address).
- Cosmopolitan Club of Harvard University, c/o Phillips Brooks House, Cambridge, Mass. (no longer affiliated).
- Cosmopolitan Club of the University of Illinois, c/o Mr. C. M. Rosenquist, Pres., 907 South 6th Street, Champaign, Ill.
- Cosmopolitan Club of the University of Illinois (Women's Chapter), c/o Mrs. A. R. Seymour, 909 West Nevada Street, Urbana, Ill. (old address).
- Cosmopolitan Club of the University of Indiana, c/o Mr. Jose J. Piatos, Pres., 508 East 6th Street, Bloomington, Ind.
- Cosmopolitan Club of the University of Iowa, Iowa City, Iowa (not heard from this last year).
- Cosmopolitan Club of Iowa State College, c/o Carl W. Schmolke, Alumni Hall, Ames, Iowa.
- Cosmopolitan Club of William Jewell College, c/o Prof. W. O. Lewis, Liberty, Mo.
- Cosmopolitan Club of Kansas State Agricultural College, Manhattan, Kan. (no correspondence for over a year).
- Cosmopolitan Club of Massachusetts Institute of Technology, Boston, Mass. (no correspondence for a year).
- Cosmopolitan Club of the University of Michigan, c/o Prof. J. A. C. Hildner, 1125 Fair Oaks, Ann Arbor, Mich.
- Cosmopolitan Club of the University of Michigan (Women's Chapter), c/o Prof. J. A. C. Hildner, 1125 Fair Oaks, Ann Arbor, Mich.
- Cosmopolitan Club of the University of Minnesota, c/o Miss Sophie Holzheld, Cor. Sec'y, 201 State Street, Minneapolis, Minn.

- Cosmopolitan Club of the University of Missouri, c/o Mr. Eliseo Quirino, res., Knights of Columbus, Columbia, Mo.
- Cosmopolitan Club of Oberlin College, Oberlin, Ohio.
- Cosmopolitan Club of Ohio State University, c/o Miss V. Dollinger, English Dept., Physics Building, Ohio State University, Columbus, Ohio.
- Cosmopolitan Club of Ohio Wesleyan University, c/o Mr. Charles Laughlin, Delaware, Ohio.
- Cosmopolitan Club of Ontario Agricultural College, c/o the Secretary of the College, Guelph, Ont.
- Cosmopolitan Club of Oregon Agricultural College, Corvallis, Ore. (not heard from since last December).
- Cosmopolitan Club of Pennsylvania State College, State College, Penn. (not heard from for a year).
- Cosmopolitan Club of Purdue University, c/o L. J. Gracia, Sec'y, 218 Waldron Street, West La Fayette, Ind.
- Cosmopolitan Club of Radcliffe College, Chelsea, Mass. (no correspondence for two years).
- Cosmopolitan Club of Leland Stanford University, c/o Mr. Ray Ground, Pres., Leland Stanford University, Cal.
- Cosmopolitan Club of the University of Syracuse (Men's Chapter), c/o Otis B. Hurry, Sec'y, Syracuse University Cosmopolitan Club, Syracuse, N. Y.
- Cosmopolitan Club of the University of Syracuse (Women's Chapter), c/o Miss Jean Flick, Sec'y, 516 Ostrom Avenue, Syracuse, N. Y.
- Cosmopolitan Club of Union College, Schenectady, N. Y. (no correspondence for a year).
- The Serpentine Club of the University of Virginia, c/o Mr. Randall T. Elliott, Pres., Charlottesville, Va.
- Cosmopolitan Club of Washington State University, Seattle, Wash. (no correspondence for a year).
- The International Club of the University of Wisconsin, c/o Prof. C. D. Coal, 1607 Adams Street, Madison, Wis.
- Cosmopolitan Club of Worcester Polytechnic Institute, c/o Prof. Z. W. Coomba, Worcester, Mass.
- Cosmopolitan Club of Yale University, c/o Mr. Henry R. Goldberg, Sec'y, New Haven, Conn.

LEAGUE TO ENFORCE PEACE (Wm. H. Short, Secretary, 22 W. 19th Street, New York). The year 1920 was not one of great activity. The fact that this was the year of the presidential election made any other course practically impossible, as its constitution forbids the League taking any active partisan part in politics. Three issues of the *Bulletin* were published and one pamphlet, entitled *The League is Alive*, a reprint of Raymond B. Fosdick's article. At what was considered the crucial time, statements were given to the press, reaffirming its belief in a League of Nations and its conviction that the United States should enter the existing League when it should contain such modifications as would make it acceptable to the American people. With the growing activity of the League of Nations, it was felt that probably the most effective piece of work which could be done would be the giving to the country of as much information as possible as to the functioning of the League. To accomplish this, it established a League of Nations News Bureau. At a meeting of the Committee on Management, held after the election, it was felt that it would be unwise for this organization to do anything active until the attitude of President-elect Harding was known. The closest cooperation exists between this organization, the League of Nations Union in England, the French Association for a League of Nations, and various other European organizations.

THE AMERICAN ASSOCIATION FOR INTERNATIONAL CONCILIATION (Sub-Station 84, New York), prints and circulates documents giving information as to the progress of the international movement. These publications are non-partisan. Their sole aim is to educate. In addition to this the Association has organized throughout the country in the various universities and colleges International Relations Clubs under the supervision of its director of the Institute for International Education.

The International Notes Section in the *Journal of International Relations* is edited by the Association.

The publications issued during the latter part of 1919 and during 1920 were:

Reply of the Allied and Associated Powers to the Observations of the German Delegation on the Conditions of Peace. November, 1919.

Agreements between the United States and France, and between England and France, June 28, 1919; Anglo-Persian Agreement, Aug. 9, 1919. December, 1919. International Labor Conventions and Recommendations, January, 1920.

Some Bolshevik Portraits. February, 1920.

Certain Aspects of the Bolshevik Movement in Russia.

Part 1, March, 1920.

Certain Aspects of the Bolshevik Movement in Russia.

Part 2, April, 1920.

German Secret War Documents. May, 1920.

Present Day Conditions in Europe, by Henry P. Davison; Message of President Wilson to the Congress on the United States and the Armenian Mandate; Report of the American Military Mission to Armenia. June, 1920.

Documents concerning the Accession of Switzerland to the League of Nations; The United States and the League of Nations: Reservations of the United States Senate of November, 1919, and March, 1920. July, 1920.

The Treaty of Peace with Germany in the United States Senate, by George A. Finch. August, 1920.

The National Research Council, by Vernon Kellogg; The International Organization of Scientific Research, by George Ellery Hale; The International Union of Academies and the American Council of Learned Societies, by Waldo G. Leland. September, 1920.

SPECIAL BULLETINS:

Jugoslavia, by M. L. Pupin; Declaration of Independence of the Mid-European Union, Oct. 26, 1918; Declaration of Independence of the Czecho-Slovak Nation, Oct. 18, 1918; Declaration of Corfu, July 20, 1917. January, 1919.

The League of Nations: Proposed Constitution of the League of Nations; speeches delivered before the Peace Conference by members of the Commission on the League of Nations; Addresses delivered by President Wilson in Boston, Feb. 24, 1919, and in New York, March 4, 1919. March, 1919.

Criticisms of the Draft Plan for the League of Nations: William Howard Taft, Charles E. Hughes, Elihu Root, April, 1919.

THE INTERPARLIAMENTARY UNION. The Hon. James L. Slayden having retired from Congress, he was because of his services as president of the American Group of the Union made a member of its Council. His successor as president is Congressman William B. McKinley, Senator-elect from Illinois. The president of the Interparliamentary Union and chairman of the Council is Lord Werdale of Great Britain.

The first attempt at a general meeting of the Union since 1914 resulted in a meeting of the Council of that body in Geneva, Oct. 7 and 8, 1919. There was another meeting of the Council at The Hague, June 5, 1920. The following self-explanatory resolutions furnished by the Secretary-General, Christian L. Lange, of Christiania, indicate the situation relative to the Union:

The Interparliamentary Council, meeting at The Hague on June 5, wishes to put on record as its firm conviction that the Interparliamentary Union has now a greater importance than ever. It should especially support and develop the action of the League of Nations, for which it can claim the honor of having done pioneer work. In order that the Union may play in future the same beneficial part as in the past, it is absolutely necessary that it should maintain its essentially international character, which is the very principle of its organization. It is therefore with the sincerest regret that the Council has learned of the recent decision of the Belgian and the French groups provisionally not to take part in interparliamentary meetings.

Without wishing to offer any comment on this attitude, which finds its explanation in the terrible sufferings of the populations of these two countries during the war, the Council wishes to express the hope that their Belgian and French colleagues will revise their attitude, and soon resume their places within the Union, in whose work so many of them have taken a useful and honorable part.

It invites at the same time the parliamentarians of all countries to form groups affiliated to the Union, if they have not already done so, and to take active part in its work.

It instructs its Bureau to transmit this resolution to all parliaments of the world.

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Whereas the XIX Conference had been convened at Stockholm for the month of August, 1914, and whereas its meeting, carefully prepared, was unavoidably prevented at the last moment by the outbreak of the war;

Whereas it has not been possible, having regard to the essentially international constitution of the Union, to hold a plenary Conference during the war, or later, during the armistice;

Whereas there exist, still at the present moment, difficulties both of a political order and with regard to traveling, which may prevent the holding of a really international Conference;

Whereas the coming elections in the United States will prevent the American parliamentarians from taking part in a Conference in 1920.

The Interparliamentary Council, meeting at The Hague on June 5, 1920, extends its cordial thanks to their Swedish colleagues for their resumed invitation, resolves to adjourn the XIX Conference to next year, and accepts the invitation of the Swedish Group to hold this Conference at Stockholm.

INSTITUTE OF INTERNATIONAL EDUCATION was established Feb. 1, 1919, by the Carnegie Endowment for International Peace, with the general aim to develop international good will by means of educational agencies and to act as a clearing house of information and advice for Americans concerning things educational in foreign countries and for foreigners concerning things educational in the United States. An administrative board determines the policy of the Institute, consisting of representatives of the endowed and State universities, of the men's and the women's colleges, and of international scholarship, law, finance, commerce, medicine, and journalism. The Institute coöperates with the American University Union and the American Council on Education. A plan of coöperation between the three has been adopted.

In 1920 the Institute sent out 15 professors on sabbatical leave to universities in various countries. These professors lectured at the universities of Oxford, London, Paris, Prague, Shanghai, Madrid, Strassburg, Athens, and San Marcus. The Carnegie Endowment furnishes funds with which to pay the cost of transportation. The Institute feels that a wisely selected professor, who because of his personality and scholarship can adequately represent America abroad, may do substantial service in the development of international good will. The Institute has invited professors from other countries to come to the United States and has circulated them among various colleges and universities to lecture before the general student body and to meet in conference with graduate students and professors.

The Institute has been interested in the problem of the exchange of students between this and other countries. It is endeavoring to compile information with reference to all existing scholarships and fellowships open to foreign students for study in the United States and for American students to study in other countries. To facilitate coöperation in matters educational between this country and others, the Institute has already appointed some one to represent it in a number of European countries and hopes to have a representative in all countries of the world.

As a means of stimulating an interest in international affairs the Institute has aided in the foundation of International Relations Clubs in some 60 colleges and universities, providing, free

of charge, syllabi, bibliographies, books, magazines, and literature generally for the study of the problems. The clubs are visited by distinguished foreigners or American professors, who are authorities in the field of international relations. An annual conference of representatives of the clubs is held in the interests of increasing the efficiency of the work.

It has published and distributed a booklet on *Opportunities for Higher Education in France*; one on *Graduate Study in the British Isles*; the first annual report of the Director; and a special bulletin for Administrative Authorities of the Universities and Colleges dealing with Visiting Professors and Commissions; *Recently-Founded Traveling and Research Fellowships*; *Foreign Professors Available for Teaching Engagements*; and *Research Opportunities Abroad for American Students*.

CHURCH PEACE UNION. During 1920 this organization found many opportunities for service and was able to accept responsibility for a large number of tasks. The World Alliance for International Friendship supported by the Union has held two conferences since the Armistice was signed, one at The Hague in September, 1919, and the second at St. Beatenberg in August, 1920. In the interim, Dr. George Nasmyth, the international organizer, visited practically all the countries of Europe and through the efforts of himself and other officers of the World Alliance, councils were established in 22 nations. These are made up of strong representatives of the churches in each one of the nations. Full reports of the St. Beatenberg Conference, together with the activities of Dr. Nasmyth, will be found in the magazine *World Friendship*.

The Archbishop of Canterbury has accepted the presidency of the Alliance and both because of the strength of its personnel and the efficient programme that it is developing, this movement offers at present an effective channel for the co-operation of the Union in doing its work. Through the Baron de Monténach and the members of the faculty of the University at Freiburg, Switzerland, a committee has been formed to represent the Roman Catholic Church in the World Alliance. Baron de Monténach took up with the Pope the matter of co-operation and in a letter from the Pope official sanction was given to the movement. Plans are under way whereby members of the Jewish faith will also be represented in the International Committee. Dr. Nasmyth died very suddenly in Geneva just following the St. Beatenberg meeting. His devotion to the cause, his energy and enthusiasm, as well as his broad culture and wide experience with men and things made him especially valuable in the work.

The Church Peace Union had much to do with arranging the World Conference at St. Beatenberg, and the conference held in Geneva to discuss the possibility of holding of an Ecumenical Conference, and assisted Mr. Robert H. Gardiner in arranging for the Conference on Faith and Order also held in Geneva. The Union also paid the bills at St. Beatenberg and thus made the conference possible. There never can be peace among the nations declared the Union's secretary without first having an understanding. This understanding can be brought about only as representatives of the various nations meet together and exchange their common views.

The Union was able to form important contacts

with many of the European nations. Through its office it is in constant communication with the representatives of Great Britain, France, Italy, Roumania, Hungary, Jugo-Slavia, Holland, Belgium, Greece, Switzerland, Austria, Germany, and the Scandinavian countries. Eight of these nations publish monthly bulletins, magazines, or newsletters. Its publication, *World Friendship*, affords a basis of interchange of news so as to bring the churches of all into closer accord.

The Union coöperating with the Federal Council sent a strong delegation to Europe in the summer to visit the various countries. As a result of this visitation it has been brought into a closer relationship not only with the needs of the countries visited, but it has learned the methods that will be most successful in helping to meet these needs. England, France, Belgium, Holland, Italy, Switzerland, Germany, Austria-Hungary, Roumania, Jugo-Slavia, Poland, Czecho-Slovakia, were visited.

Through a committee appointed for the purpose of bringing about regular interchange between the churches of these countries, the following men from England have visited America: President Alfred E. Garvis, Canon E. A. Burroughs, Rev. Alexander Ramsey, D.D., Rev. T. Rhonda Williams, Rev. R. C. Gillie, D.D., Mr. E. Harold Spender; and the following men from France: Gen. Robert Georges Nivelles, Col. Paul Azan, Rev. André Monod. These latter visitors came to America as the guests of the Mayflower Council which was organized for the purpose of properly celebrating the Tercentenary of the Landing of the Pilgrims. The Council is representative of all the religious faiths of America.

The increased bitterness of the agitation against the Japanese on the Pacific Coast has brought about a situation that is full of menace. In a special report Dr. Sidney L. Gulick dealt very fully with this problem. During the year the treasurer, Mr. George A. Plimpton, made an extended trip through China and met many of the leaders of both countries. Dr. Gilbert Bowles, who is one of the best known among the Christian workers in Japan, was recently in America, and also attended the conference at St. Beatenberg.

Secretary Atkinson visited California in the spring and spoke in leading universities and schools, addressed mass meetings in the principal centres, and met groups of people, with the purpose of stimulating the church people to express themselves upon this important question. The large vote in favor of restrictions upon the rights of the Japanese, which was taken in the last election adds to the tenseness of the situation. In the opinion of the Union there is no more important question calling for action than this question of our relations to the Oriental. Failure to do justice to these people will certainly lead to disastrous results. A just settlement of the vexed problem is demanded in the name of humanity and our common faith. America's missionary enterprises in the Orient will all be nullified if America works an injustice upon the Oriental within her borders.

Early in the year a committee was appointed to study the Mexican situation. This committee was authorized to visit Mexico on a mission of good will and friendship. The committee met several times and coöperated with a similar committee of the League of Free Nations Association and also with one of the Federal Council. The

political situation in relation to Mexico has been so complicated and so many changes have taken place that the committee has not thought it well to exert itself to do more than has been done; and it has not seemed best to attempt a visit to Mexico. The committee still exists and if it seems wise to the trustees will continue its quiet study of the situation and keep watch upon the changes that may take place and be ready to suggest appropriate action from time to time.

Constantly throughout the year the Union advocated the ratification of the League of Nations. Up to the time that this question became the central and disputed point of party politics a large part of its energies was devoted to the propaganda in behalf of the League of Nations. With the division of opinion that came with the political campaign it became obvious that the Union could not take sides and enter into a partisan fight.

From the experience of the year and the voluminous correspondence carried on through the office of the Union the secretary declared his opinion to be that the religious people of America were overwhelmingly in favor of a League of Nations and that there was keen disappointment that our nation was not represented in the sessions of the assembly now being held at Geneva.

The policy of the Union has been to move slowly. There is so much confusion at present and every question is involved with so many minor considerations which must be understood that it has seemed wise to make less speed. The secretary believes that the situation is improving and is quite certain that the time is coming when he can afford to set before the Union certain goals and then expend every energy in the effort to reach them. In his report he presented a programme which had been drawn up and agreed upon by a number of the trustees, in an informal conference, as the basis for discussion in this meeting. There are three things that should be considered in the discussion of the programme: 1. Has the time come for us to consider a programme? 2. Is this programme adequate? 3. Shall the programme be published and primary emphasis be put upon it?

A large portion of the assistant secretary's work was in connection with the American Mayflower Council, which organized to plan for the celebration of the Mayflower Tercentenary in co-operation with other organizations in this and other countries. The most important features in the celebrations of the Tercentenary was the speaking campaign across the country, meetings being held in 63 cities. Most of the work in organizing these meetings fell to the associate secretary. In June he visited Richmond, Atlanta, St. Louis, Dallas, Denver, Minneapolis, Chicago, Cleveland, and Albany for the purpose of establishing regional committees to undertake the responsibility of making the arrangements for the mass meetings. The American speakers were: Dr. Samuel A. Eliot; Dr. John H. Finley; Dr. J. Percival Huguet; Dr. Charles E. Jefferson; Bishop William F. McDowell; Dr. Richard Roberts; Dr. Herbert L. Willett; Dr. Talcott Williams; Rabbi Stephen S. Wise; Dr. L. P. Powell; Dr. Gais G. Atkins; and Dr. W. O. Thompson. The British delegation was made up of Rev. R. C. Gillie; Canon E. A. Burroughs; Rev. Alexander Ramsay; Mr. E. Harold Spender; and Mr. P. Whitwell Wilson.

Early in the year a visit was paid to this coun-

try by Dr. Drummond of England, who came to report concerning the results of his investigations of the Religious Minorities in Transylvania. His visit was followed by a visit of Mr. Pelanyi of Hungary who also set forth the conditions of the sorely-tried minorities in that country. In different parts of Europe religious minorities have come into conflict with new and bitter conditions. Following these reports a large gathering of men was brought together to consider the questions. A representative committee was established. Dr. Arthur J. Brown was elected chairman and the associate secretary Rev. Linley V. Gordon of the Union, executive secretary. During the summer two of the members visited European countries where religious minorities are receiving the greatest ill-treatment, and since their return have reported their findings to the general committee. Facts have been secured and collated concerning the oppression manifested toward the Jews in Poland, Ukraine, Lithuania, Galicia, and Budapest. Especially in Poland have they been the victims of assault, murder, and discrimination at the hands of Polish soldiery and civilians. In Transylvania the Reformed Church, the Unitarians, Roman Catholic, and Lutheran religious minorities are being jeopardized; in Czecho-Slovakia the Presbyterians are sorely-tried; in Lithuania, the Reformed Church; in Serbia, the Baptists are being persecuted by local and municipal authorities and public gatherings are barred. It is alleged that in Alsace-Lorraine German Roman Catholics are being driven out, and that in Belgium the Walloons are receiving ill treatment at the hands of the Belgians.

The committee has not engaged in any public propaganda. It has been making surveys of conditions so that it might be sure it had the facts well in hand before taking the next step.

THE WORLD PEACE FOUNDATION during 1920 steadily supported ratification of the Treaty of Versailles including the Covenant of the League of Nations with whatever reservations would pass the Senate. Its work to this end was personal rather than institutional. The Foundation as a legal charity has not felt itself competent to engage actively in the political controversies which necessarily characterized a presidential election year. Its officials from the outset took the attitude that the issue could not be made an effective vote-making issue in a presidential campaign. This conclusion was reached because it was realized that any issue in foreign affairs would affect the majority of voters to a far less degree than those more obviously and more closely touching the daily life of the voter and also because it was clear that the American election could not positively determine issues whose conditions are largely within the free competence of a world unaffected by any national election. The Trustees of the Foundation voiced their official position in the following note adopted September 30th:

The problem of the organization of the world for peace is greater than any man or any body of men. Although the ratification of the treaty of Versailles, with or without reservations, was prevented by the failure of the President and the Senate to agree, nevertheless, whatever political party may come into power, it will find that the interest, the conscience and the sense of duty of the American people will require the nation to take its part in the essential work of establishing and preserving the peace of the world.

The World Peace Foundation was created to promote

the organization of the world for the prevention of war. The Trustees of this Foundation believe that the only practical way of achieving that result is by joining the existing League of Nations, with such modifications, if any, as the wisdom of our statesmen may think proper for the welfare of the United States. We have assurance that foreign governments will welcome the United States with any such modifications as it may think necessary.

This declaration was unanimously voted at a special meeting of the Board of Trustees, including both Democrats and Republicans, and was signed by William H. P. Faunce, president; George W. Anderson, Sarah Louise Arnold, George H. Blakeslee, Stephen Pierce Duggan, A. Lawrence Lowell, Samuel W. McCall, Bliss Perry, Albert E. Pillsbury, George A. Plimpton, and Joseph Swain; and Edward Cummings, general secretary.

The Foundation felt early in the year that it was important for the American people to have accurate knowledge of what the organization was doing. In accordance with this conviction, a brochure covering in detail the work of the first three months of the League's activities was issued and extensively distributed. In an effort to redirect attention, to the real meaning of the Covenant in an authentic way, the official Swiss Commentary on it was translated and published. Another literary effort with cognizance of the political conditions but without participation in them was the compilation and publication of the texts of all resolutions and reservations which came to a vote in the Senate together with the vote thereon. The Foundation received an early copy of the draft scheme for the Permanent Court of International Justice prepared by the Committee of International Jurists at The Hague and brought it out promptly in a large edition for the information of the American public in mid-September. It did the same thing for the report of the International Financial Conference in October and closed its year's publications with a complete summary account of the meeting of the Assembly together with a summary of the intervening activities of the Council.

The Foundation was greatly interested in the project to establish a League of Nations News Bureau, which began activities on October 1st with headquarters in New York with Raymond B. Fosdick, former Under Secretary-General of the League of Nations, and Denys P. Myers, respectively, as director and assistant director. This organization which originally began operations under the auspices of the League to Enforce Peace became independent on November 18th and maintains separate offices for the purpose of issuing to the American press accurate information on the activities of the League of Nations. It is enabled to do this by the constant receipt by Mr. Fosdick, in his personal capacity, of the documents prepared in the secretariat. The address of the Foundation is 40 Mount Vernon Street, Boston, Mass.

WOMEN'S INTERNATIONAL LEAGUE FOR PEACE AND FREEDOM. In May, 1919, the Zurich International Congress of Women assembled under the presidency of Jane Addams. It was called by the International Committee of Women for Permanent Peace which was the outcome of the International Congress of Women held at The Hague in 1915. (See **YEAR BOOK** for that year.) The Zurich Congress, at which 147 delegates from 15 countries were present, altered the name of the organization to Women's International League for Peace and Freedom and transferred

the international office to "the seat of the League of Nations." The object of the League is to organize support for the resolutions passed at the Women's International Congress at The Hague in 1915 and in Zurich in 1919, and to support movements to further Peace, Internationalism, and the Freedom of Women.

The Executive Committee is made up as follows: Jane Addams, United States (president); Emily Balch, United States (secretary-treasurer); Gabrielle Duchêne, France; Marguerite Gobat, Switzerland; Yella Hertzka, Austria; Lida Gustava Heymann, Germany (vice-president); Marta Larsen, Norway; Chrystal Macmillan, Scotland; C. Ramondt-Hirschmann, Holland (assistant-secretary); H. M. Swanick, England (vice-president).

The League has organized sections and official correspondents in the following countries: Argentina, Australia, Austria, Bulgaria, Canada, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Ireland, Italy, Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, United States.

The report of the Zurich Congress gives a full account of the purposes and character of the League and furnishes an extremely interesting picture of the state of mind of pacifist women. The Congress not only sent the following telegrams to Paris but sent an international delegation, which was received by representatives of all the chief Allied governments to make representations in the same sense.

Telegram re. FAMINE and BLOCKADE: This International Congress of Women regards the famine, pestilence and unemployment extending throughout great tracts of Central and Eastern Europe and into Asia as a disgrace to civilization.

It therefore urges the Governments of all the Powers assembled at the Peace Conference immediately to develop the interallied organizations formed for purposes of war into an international organization for purposes of Peace, so that the resources of the world,—food, raw materials, finances, transport—shall be made available for the relief of the peoples of all countries from famine and pestilence.

To this end it urges that immediate action be taken (1) to raise the blockade, and (2) if there is insufficiency of food or transport, (a) to prohibit the use of transport from one country to another for the conveyance of luxuries until the necessities of life are supplied to all people; (b) to ration the people of every country so that the starving may be fed. The Congress believes that only immediate international action on these lines can save humanity and bring about the permanent reconciliation and union of the peoples.

Telegram re. TREATY OF PEACE: This International Congress of women expresses its deep regret that the terms of peace proposed at Versailles should so seriously violate the principles upon which alone a just and lasting peace can be secured, and which the democracies of the world had come to accept.

By guaranteeing the fruits of the secret treaties to the conquerors, the terms of Peace tacitly sanction secret diplomacy, deny the principles of self-determination, recognize the right of the victors to the spoils of war, and create all over Europe discords and animosities, which can only lead to future wars.

By the demand for the disarmament of one set of belligerents only, the principle of justice is violated and the rule of force is continued.

By the financial and economic proposals a hundred million people of this generation in the heart of Europe are condemned to poverty, disease and despair, which must result in the spread of hatred and anarchy within each nation.

With a deep sense of responsibility this Congress strongly urges the Allied and Associated Governments to accept such amendments of the Terms, as shall bring the Peace into harmony with those principles first enumerated by President Wilson upon the faithful carrying out of which the honor of the Allied peoples depends.

The Zurich Congress regarded the question of education as fundamental to its programme and created a committee on the subject under the

chairmanship of Dr. Emily Ernesen (Zoölogical Museum, Christiania, Norway). In September the Geneva Office organized an informal international conference where modern tendencies in education and especially the relation of education to internationalism were discussed.

Members of the League have been prominent in the organization of relief of the European famine. Miss Addams with other American and English members made observations of conditions. The British section was concerned in the organization of the "Fight the Famine Council" and the Geneva office supplied a report on certain aspects of the milk famine in Central Europe to the Economic Conference in London in November, 1919. Members of the League have been active also in endeavoring to secure the repatriation of the prisoners in Siberia. The British section was also actively interested in the London conference of September 3d and 4th on the Representation of Women in the League of Nations.

The German section, which is large and active, is led by women who displayed a consistent opposition to war when to do so was most costly, and who protested against the war atrocities so far as known to them and suffered for their principles. The section is trying to get a Minister of Peace appointed in the cabinet and has petitioned for a governmental investigation of the conduct of the war atrocities, as well as of responsibility for its outbreak and continuance. They are actively interested in eliminating militarism and chauvinism from German education.

With 1920 the League began the publication of an organ appearing 10 times a year under the name of *Pax et Libertas*. There will be a regular number every other month, and four special supplements during the year. The first supplement was devoted to the economic situation, famine, blockade, relief, etc.

[The first organ of the League, *The International*, consisted of Vol I, 1916 (six numbers), Vol. II, 1917 (three numbers), Vol. III, 1918 (four numbers), Vol. IV, 1919 (one number). Between the Zurich Congress and the end of 1919 the Geneva Bureau issued five *News-Sheets*.]

WOMEN'S INTERNATIONAL LEAGUE FOR PEACE AND FREEDOM. *Section for the United States.* Its object as stated in the constitution is: To promote methods for the attainment of that peace between nations which is based on justice and good will and to coöperate with women from other countries who are working for the same ends. A programme of immediate action was adopted at the annual meeting at Chicago, April 23 and 24, 1920. It includes: 1. Fight the World Famine (a) by philanthropic contributions and government loans for food; (b) by spreading information concerning the lamentable conditions in starving Europe. 2. Urge through all official channels the repatriation of all prisoners of war, especially the many thousands languishing in Siberia. 3. Stand for our constitutional rights of free speech, free press, free assembly, and minority representation in legislature. 4. Support bills for universal physical education without military training; oppose military training in our schools and compulsory military service. 5. Work toward universal disarmament (land, sea, and air). 6. Protest against the spirit and methods of "raids" and seizure for deportation and exile, and do all in our power to allay the hysteria and panic which make these possible. 7. Appeal for the immediate release

of all political prisoners. 8. Permeate the Americanization movement with the spirit of appreciation of the gifts of many races to our national life. 9. If the League of Nations Covenant is signed by the United States, work for its amendment along lines of equality of rights among nations and true union of peoples to abolish war. If it is not signed, work for the revision of the Treaty and of the League of Nations by a body of delegates democratically chosen from all nations. 10. Support morally and financially the International headquarters at Geneva and circulate the publications and promote the aims of the W. I. L.

AMERICAN SOCIETY FOR THE JUDICIAL SETTLEMENT of International Disputes has had no meeting since the world-war began. It will be disbanded, as its object, the creation of a world court, has now been realized.

AMERICAN SOCIETY OF INTERNATIONAL LAW confined its activities during 1920 to the publication of its quarterly review, *The American Journal of International Law*. A meeting of the Executive Council, held in Washington on November 13th decided to resume the annual meetings of the Society in April, 1921.

THE NOBEL PEACE PRIZE for 1920 was awarded to President Wilson for having taken the initiative for the establishment of the League of Nations. The 1918 prize was awarded to Léon Bourgeois, the president of the League of Nations Council, for his eminent work in connection with the bringing about of the materialization of the League of Nations idea. See NOBEL PRIZE.

INTERNATIONAL CHAMBER OF COMMERCE organized in June is an important development in bringing about better international understandings. The United States, Great Britain, France, Belgium, and Italy have appointed commissioners. America's representative is Frederick P. Keppel, who defines the purposes of the International Chamber to be: To remove international friction; to facilitate the commercial intercourse of nations; to safeguard international trade; to standardize international documents and laws affecting commerce; to secure harmony of action on all international questions affecting commerce, finance, and industry; to increase the total production of the world and make the products available to the peoples of the world; to cultivate personal acquaintanceship among business men and bankers of the different nations and thus lessen international prejudices and misunderstanding; to promote peace, progress, and cordial relations among the countries and their citizens by the coöperation of business men and their organizations; to act as an instrument of coördination which will suggest trade regulations and legislative measures to facilitate and encourage the development of economic resources; to centralize data concerning economic subjects and social conditions and gather facts relating to the respective needs, production, and future possibilities of each country; to inform public opinion through publication of facts regarding business conditions and through the dissemination of the views of technical experts and business men.

THE MID-EUROPEAN UNION (McLachlen Building, Washington) has been striving towards the stabilization of social and economic conditions. Material service in this direction has so far been rendered through its agencies. Strikes and gen-

eral unrest have been and are being combatted, and radicalism in its various forms is being fought. This has been done through organized activity among the various racial groups and their leaders, working through extensive organizations, both civic and church, affiliated with this Union. Expenses connected with these endeavors, with slight exceptions, have been borne by these racial groups through voluntary contributions.

AMERICAN CIVIL LIBERTIES UNION (138 West 13th Street, New York) has built up a nationwide organization capable of dealing with all the aspects of the fight for civil liberty,—individual cases, free speech demonstrations, attacks on labor unions in the exercise of their rights, and litigation in the courts. This organized service is made up of 400 lawyers, 800 local and state correspondents, 50 special investigators, 100 speakers, 100 writers, and 8 local cooperating organizations and committees,—with special organizations for civil liberty in Chicago, Boston, and San Francisco. A nation-wide clipping service gives the facts. The mailing lists reach regularly the leading libraries, organizations, and men and women in public life. The publicity service is the chief means of reaching the public,—with a weekly news letter of the essential facts to 400 farmer, labor, liberal, and radical papers,—and with special stories oftener. The pamphlet publications carry the facts of more permanent value. Monthly law bulletins give cooperating attorneys important information in civil liberty cases. Posters advertise the striking facts, displayed on organization bulletin boards.

The essential feature of its activities is the free speech demonstrations in areas of conflict by which it helps local groups to get their rights against arbitrary officials or local laws opposed to the constitution. Such demonstrations are usually on behalf of labor unions or radical political parties in industrial centres,—as for instance, the campaigns in the steel district of western Pennsylvania, the wool-town of Passaic, N. J., the coal regions of West Virginia, and the Connecticut manufacturing towns.

Efforts to defeat laws restricting civil liberty absorb much of its energy. The last Congress kept it busy and the new one promises as well. But especially it is preparing a nation-wide campaign for action against sedition and criminal syndicalism laws in the 35 States which now have them,—most of whose Legislatures meet next year. The Union is involved in a host of details of prosecutions under these State laws, similar city ordinances, and hold-over cases from the war. Legal advice, bail, appeals, publicity,—all make up its service. Efforts to secure the release of conscientious objectors and political prisoners constitute a considerable activity in themselves. The Union recently created a National Bail Fund to write bail in civil liberty cases all over the United States.

THE AMERICAN UNION AGAINST MILITARISM continued its efforts in opposition to a permanent system of compulsory military training in America and bulletins about congressional action on military training have been issued and a press bureau maintained. These activities have been: Combating through the press and the usual legitimate methods of propaganda all tendencies toward militarism in this country. The Union has fought universal military service at every turn, opposed the nomination of Major-General Wood for presidency, the tendency of militarism to in-

vade our schools. It is at present engaged in furthering the campaign for disarmament. The headquarters are 203 Westory Building, Washington, D. C. Its chairman was Oswald Garrison Villard, and its executive secretary Charles T. Halloran.

LEAGUE FOR DEMOCRATIC CONTROL (No. 2 Park Square, Boston) continued its work during 1920 to create a tolerant and enlightened public opinion on the most vital international and economic problems of the day: to uphold American constitutional rights of free speech, free press, and free assemblage; to endeavor to discover and publish the truth on questions of public import. Its methods of work include supper-conferences and meetings at which speakers of note are heard and subjects of even the most controversial nature are frankly discussed; free distribution of leaflets on current emergencies; a lending library of recent books on political and economic subjects, as well as earlier standard works.

THE FELLOWSHIP OF RECONCILIATION (118 East 28th Street, New York City). The real work of the Fellowship has been done by individuals and small groups in different parts of the country. As far as the central office is concerned, in the Spring it sent out about 200,000 letters to ministers of various denominations, pointing out how in its judgment the country had failed in achieving the things for which the war was supposed to have been carried on, and raising the question as to whether it was not because the way of war could never be expected to gain those things, and inviting them to consider the way of reconciliation as the only better way. In the autumn the secretary, Paul Jones, sent a letter to bishops of the Episcopal Church in this country, calling their attention to the striking phrases in the encyclical letter of the Lambeth Conference, which pointed towards the way of reconciliation as being God's way, and raising the question as to whether they should not follow the logic of that encyclical letter and declare themselves clearly against any war between God's children.

In November he sent out to all the members of the Fellowship and to some 600 ministers, editors, and others communications asking them to mark Armistice Day by a call for disarmament, in which our country should lead, rather than using it merely to glorify military victory.

THE PEOPLE'S FREEDOM UNION (138 West 13th Street, New York) was organized to coordinate for effective national action all American groups striving to help America in the rebuilding of a world order which shall substitute for militarism, governmental coercion, and imperialism, civil liberty, economic justice, and international good will. It was formed in the latter part of October, 1919, as an amalgamation of The People's Council of America and the New York Bureau of Legal Advice. Its accomplishments were: A mass meeting in Madison Square Garden addressed by James H. Maurer, Wilfred Humphries, Dr. Norman Thomas, and Rose Schneidermann, and presided over by Dudley Field Malone, at which resolutions demanding the lifting of the Russian blockade and the recall of American troops from Siberia were passed; a mass meeting in Carnegie Hall on December 19th, against intervention in Mexico; a Christmas Day demonstration against the detention in jail of the country's 1500 political prisoners. This took the form of a "walk" up Fifth Avenue, in which about 200 persons participated.

In February, 1920, as some of the officers accepted work in other cities, and two of the leaders were ill for some time, it was decided to disband.

IOWA. POPULATION. According to the preliminary report of the census of 1920, there were 2,404,021 residents in the State, January 1, 1920, as compared with 2,224,771 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 213,312, a falling off of 1.7 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	10,300,000	473,800,000	\$222,683,000
	1919	10,000,000	416,000,000	499,200,000
Buckwheat	1920	8,000	136,000	182,000
	1919	7,000	98,000	166,000
Oats	1920	5,894,000	239,866,000	82,752,000
	1919	5,670,000	196,182,000	125,556,000
Barley ...	1920	284,000	7,810,000	4,920,000
	1919	315,000	8,032,000	8,996,000
Wheat ...	1920	831,000	18,011,000	18,074,000
	1919	1,580,000	22,515,000	45,080,000
Flaxseed ..	1920	12,000	120,000	216,000
	1919	13,000	124,000	521,000
Clover Seed	1920	134,000	268,000	3,283,000
	1919	110,000	154,000	4,112,000
Rye	1920	68,000	1,071,000	1,253,000
	1919	70,000	1,113,000	1,469,000
Hay	1920	3,531,000	* 4,998,000	79,457,000
	1919	3,647,000	* 5,840,000	100,957,000
Potatoes ..	1920	104,000	11,440,000	18,957,000
	1919	115,000	4,945,000	9,494,000
Sorgh'm S'p	1920	5,100	490,000	701,000
	1919	5,000	* 450,000	689,000
c Tons. * Gallons.				

CHARITIES AND CORRECTIONS. The following list gives the names and situation of the State institutions under the Board of Control with their population at the latest date for which figures were available:

Iowa	
Soldiers' Orphans' Home, Davenport.....	334
Soldiers' Home, Marshalltown.....	724
School for the Deaf, Council Bluffs.....	....
Training School for Boys, Eldora.....	....
Training School for Girls, Mitchellville.....	645
Inst. for Feeble-Minded Children, Glenwood.....	1,497
Sanatorium for Treatment of Tuberculosis, Oakdale	219
Mt. Pleasant State Hospital, Mt. Pleasant.....	1,108
Hospital for Inebriates, Mt. Pleasant.....	7
Independence State Hospital, Independence.....	1,125
Hospital for Inebriates, Independence.....	....
Clarinda State Hospital, Clarinda.....	1,198
Cherokee State Hospital, Cherokee.....	1,121
Hospital for Inebriates, Cherokee.....	....
State Hospital for Inebriates, Knoxville.....	36
Penitentiary, Fort Madison.....	515
Reformatory, Anamosa.....	580
Women's Reformatory, Rockwell City.....	22
Hospital and Colony for Epileptics.....	104

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 634,674; Cox (Democrat), 227,921; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 280,439; Wilson (Democrat), 221,699; Benson (Socialist), 10,976; Prohibitionist, 3371; Socialist Labor, 460.

OFFICERS. Governor, N. E. Kendall; Lieutenant-Governor, John Hammill; Secretary of State, Walter C. Ramsay; Treasurer, W. J. Burbank; Auditor, Glenn C. Haynes; Attorney-General, Ben. J. Gibson.

JUDICIARY. Supreme Court: William G. Evans, Truman S. Stevens, Byron W. Preston, Thomas Arthur, Silas M. Weaver, Lawrence DeGraff, and E. F. Faville.

IOWA. UNIVERSITY. A co-educational State institution, at Iowa City, Iowa, founded in 1847. In the summer session of 1920 there were 608 men and 780 women enrolled, and for the fall session 2753 men and 1705 women (allowing for duplications). There were 402 members on the teaching staff, 156 new members having been added. The library contained 166,000 volumes. The total income for 1919-20 was \$2,500,887. The State appropriated for 1920-21 \$1,138,000 for support, child welfare, and special purposes. New buildings were under construction, namely: A large armory estimated to cost \$125,000; a nurses' home, \$150,000; and a psychopathic hospital, \$175,000. An appropriation of \$50,000 was received for the building of Old Capitol. President, Walter Albert Jessup, Ph.D.

IRELAND. See GREAT BRITAIN.

IRON AND STEEL. In the great industrial readjustment taking place throughout the world after the world war iron and steel naturally were important considerations. The destruction of French and Belgian plants and the loss of Alsace-Lorraine with its valuable mines by Germany of course were destined to affect the world's industrial conditions. The two years since the Armistice were a test of the ability of the Continental nations to regain their former positions in iron and steel, but statistics seemed to indicate that by the end of 1920 these countries were not figuring to any large extent or to a degree that seriously would threaten the position of the United States and Great Britain as the chief producers. This was indicated clearly in statistics of pig iron and steel production during 1920 by the leading nations compiled by the *Iron Age* (New York), which are given herewith. For the United States and Great Britain the data given below were complete to December, while those for France and Belgium were based on 10 months returns. In Germany no iron and steel statistics had been published since November, 1919, consequently the figures given were the average for the first 10 months of that year. They were repeated for 1920. It was clearly evident that the German industry was handicapped throughout 1920 and it was a question if the output of 1919 would be equalled. The figures represent monthly average production, gross tons (2240 pounds) being used for the United States and Great Britain and metric tons (1000 kilos. = 2204.6 pounds) for the other three countries. Comparison is made with 1919 and with 1913:

ESTIMATED MONTHLY OUTPUT OF PIG IRON AND STEEL IN FIVE COUNTRIES IN 1920, 1919 AND 1913

Pig Iron	1920	1919	1913
United States	3,000,000	2,584,600	2,581,000
Great Britain	645,000	617,000	855,000
Germany	519,000	519,000	1,508,000
France	246,000	289,000	428,000
Belgium	80,800	.....	204,000
Total	4,490,800	4,009,600	5,576,000
Steel ingots and casting			
United States	8,420,000	2,889,270	2,608,000
Great Britain	738,000	658,000	689,000
Germany	652,000	682,000	1,638,000
France	242,600	190,000	885,000
Belgium	97,260	.....	202,800
Total	5,129,860	4,369,270	5,467,800

Analyzing the above figures it will appear that in 1913 the United States contributed 46.3 per cent of the pig iron output of the five countries;

but by 1919 its production had increased to 64.4 per cent and in 1920 had advanced to 66.8 per cent. In Europe pig iron output had declined since 1913, even Great Britain showing a net loss of about 200,000 tons per month in 1920, not all accounted for by the coal strike. As the *Iron Age* states the falling off in the pig iron output of the four European countries by about 1,100,000 tons per month in 1920 and by 1,500,000 tons per month less in 1919 than in 1913 was an outstanding feature.

In steel the relations were somewhat different, but the United States here took the lead even more strongly. Its percentage of the total in 1913 was 47.6, rising to 66.1 per cent in 1919, and to 66.6 per cent in 1920. In 1920 the United States produced more steel than in any year previous to the war. Great Britain also greatly increased its steel production despite the coal strike. It will also appear from the table that France was returning as a producer but Belgium was hardly started though making good progress in reestablishment.

IRON ORE PRODUCTION IN THE UNITED STATES. The following figures for iron ore production were supplied by the United States Geological Survey: The iron ore mined in the United States in 1920, exclusive of that which contained more than 5.5 per cent of manganese, is estimated at 67,773,000 gross tons, an increase of 12 per cent as compared with the output in 1919. The shipments of ore from the mines in 1920 are estimated at 69,558,000 gross tons, valued at \$290,607,000, an increase in quantity of nearly 24 per cent and in value of nearly 43 per cent as compared with shipments in 1919. The average selling value of the ore per gross ton at the mines for the whole United States in 1920 was \$4.18; in 1919 it was \$3.61. The stocks of iron ore at the mines, mainly in Michigan and Minnesota, apparently decreased from 12,986,000 gross tons in 1919 to 11,145,000 tons in 1920, or 14 per cent. The production of iron ore in 1920 was less than 2,000,000 tons below that of 1918 and is exceeded only by that of the war years 1916, 1917, and 1918. In 1920 shipments exceeded production by approximately 1,785,000 gross tons, but in 1919 production exceeding shipments by about 4,147,000 tons. The record of the iron-mining industry in 1920 is the more remarkable when it is considered that shipments were hindered by a strike of ore handlers at the shipping docks early in the season, then by railroad tie-ups, due to a strike of switchmen, and by shortage of coal, cars, and vessels, and later by the closing down of blast furnaces, which was brought about by the cessation of the demand for pig iron and steel.

About 86 per cent of the iron ore mined and shipped in 1920 came from the Lake Superior district, in which 58,173,000 gross tons was mined and 60,656,000 tons was shipped, increases of about 12 and 24 per cent, respectively, as compared with the quantities mined and shipped in 1919. The ore shipped in 1920 was valued at \$257,543,000, an increase of about 43 per cent. These totals include the ore mined and shipped from the Mayville and Baraboo mines in Wisconsin, and ore shipped by rail as well as water from all mines, but exclude manganiferous ores that contained more than 5.5 per cent manganese. The ore is chiefly hematite. The stocks of iron ore in this district apparently increased from about 11,887,000 gross tons in 1919 to about 10,000,000 tons in 1920, or 16 per cent. The ship-

ments of iron ore by water from the Lake Superior district in 1920 (including manganiferous iron ore), according to figures compiled by the Lake Superior Iron Ore Association, amounted to 58,527,226 gross tons, an increase of 24 per cent as compared with these shipments in 1919. A total of about 1,529,000 tons is thus indicated to have been shipped by rail. The average selling value of the ore at the mines in the Lake Superior district in 1920 was \$4.29 a ton; in 1919 it was \$3.70. The mines in Minnesota furnished 67 per cent of the total iron ore shipped from the Lake Superior district in 1920 and 58 per cent of the total of the United States. The mines in Michigan furnished 31 per cent of the Lake shipments and 27 per cent of the grand total.

According to the *Iron Age* ore shipments by water from the Lake Superior district during the 1920 season amounted to 58,527,226 gross tons. Adding the all rail movement the total movement for the season was stated at 60,227,226 tons. This total can be compared with lake and all rail shipments during the previous four years as follows: 1919, 48,812,522 tons; 1918, 62,836,172 tons; 1917, 64,437,003 tons, and 1916, 66,658,466 tons. At the close of navigation in 1920 there was more ore on docks than ever before on that date. The balance on Lake Erie docks December 1st was 10,955,868 gross tons. This compared with 10,454,843 tons in 1919, 10,376,509 tons in 1918, 10,023,743 tons in 1917, and 9,958,306 tons in 1916. Notable among the smaller producers was Alabama with an output of 6,398,000 tons of iron ore of which 4,750,000 tons were Red Mountain self-fluxing red ore groups. New York produced over 1,000,000 tons of iron ore, while New Jersey, Pennsylvania, Virginia, North Carolina, and other States made up the nation's total.

AMERICAN IRON AND STEEL PRODUCTION. In the United States the output of iron and steel in 1920 was nearly 20 per cent greater than in 1919 but fell below the average for the last two years of the war, 1917 and 1918. Pig iron production was 36,414,114 tons and steel ingot and castings production was in excess of 40,000,000 tons. Comparison with the four preceding years is given below:

	Pig iron Gross tons	Steel ingots and castings Gross tons
1916	39,434,797	42,773,680
1917	38,621,216	45,060,607
1918	39,054,644	44,462,432
1919	31,015,864	34,671,332
1920	36,414,114	41,000,000

* Estimated.

The pig iron production in 1920 was made notwithstanding embarrassments due to railroad and coal strikes, car shortages, and other difficulties and compares quite favorably with that of the extraordinary war years 1916, 1917, and 1918. The production in the United States in 1920 was placed at 36,414,114 tons against 30,582,878 in 1919, but an average of over 2,000,000 below the figures for 1918, 1917, and 1916. The daily rate for December, 1920, 87,222 tons, was 10,600 tons under that for November, divided almost equally between steel and merchant plants.

Those interested will find much of the story told in the following comparison of pig iron production in the United States for the three years 1918, 1919, and 1920:

	1918	1919	1920
January	2,411,768	3,802,260	8,015,181
February	2,819,299	2,940,168	2,978,879
March	8,213,091	3,090,248	8,375,907
April	8,288,211	2,478,218	2,739,797
May	8,446,412	2,108,056	2,985,682
June	8,823,791	2,114,868	8,043,540
July	8,420,988	2,428,541	8,067,048
August	8,889,585	2,748,388	8,147,402
September	8,418,270	2,487,965	8,129,823
October	8,486,941	1,868,558	8,292,597
November	8,854,074	2,392,850	2,984,908
December	8,438,617	2,683,268	2,703,855
Total	38,506,047	80,582,873	36,414,114

The daily average rate is given in the table below:

	1918	1919	1920
January	77,799	106,525	97,264
February	82,885	105,006	102,720
March	103,648	99,685	108,900
April	109,607	82,607	91,827
May	111,175	68,002	96,312
June	110,798	70,495	101,451
July	110,854	78,340	98,981
August	109,841	88,496	101,529
September	113,942	82,982	104,810
October	112,482	60,115	106,212
November	111,802	79,745	97,830
December	110,762	84,944	87,222

The ferromanganese output of the United States in 1920 was 62 per cent higher than in 1919. Following are comparisons of production of both ferromanganese and spiegeleisen:

	1918	1919	1920
January	30,695	82,787	23,957
February	26,114	28,105	18,038
March	39,122	26,644	35,275
April	35,511	17,808	27,628
May	54,633	14,604	33,407
June	44,844	14,254	34,751
July	51,762	14,805	36,789
August	54,009	17,419	36,985
September	66,275	20,681	39,546
October	70,379	20,288	34,786
November	59,688	19,964	26,944
December	49,435	15,718	28,028

The number of pig iron furnaces in blast at the end of 1920 were 201 with a capacity of 76,540 tons, as compared with 252 and 90,040 on December 1st. Total stacks on December 31st were 416, indicating that operations dropped below 50 per cent. Salient facts regarding pig iron production in 1920 may be summarized by beginning with the statement that in the first half of the year the demand was sufficient to keep blast furnaces and steel works going at capacity, but output was reduced by an inadequate supply of fuel. In April the railroad strike curtailed operations in all lines, while later railroad congestion interfered seriously with production. In the last quarter of the year orders fell off sharply, and naturally output declined.

The variations in the pig iron production appear in the following statement of the number of furnaces in blast at the beginning of each month from which it will appear that the decreased production did not begin until October:

Jan. 1	262	July 1	302
Feb. 1	290	Aug. 1	293
March 1	304	Sept. 1	311
April 1	312	Oct. 1	319
May 1	281	Nov. 1	285
June 1	295	Dec. 1	252

NEW BLAST FURNACES. The increase in pig iron making capacity in the United States in 1920 was larger than in 1919. In 1919 only two blast

furnaces were completed and put into operation, but in 1920 six furnaces were built, most of which were in operation by the end of the year, whereas in 1918 eight furnaces were completed and in 1917 there were 14. The 1920 record may be compared with that of 1916, when four furnaces were put in blast. The six furnaces completed in 1920 represented a capacity of 875,000 gross tons of pig iron. However at the end of the year there was only one blast furnace under construction for probable completion in 1921, which was probably the smallest contemplated increase to the pig iron capacity of the country ever recorded. It represents an estimated new capacity of about 200,000 tons of pig iron per year. The accompanying table also from the *Iron Age* gives details of new blast furnaces completed in 1920 and at present under construction. In addition several companies rebuilt or enlarged their furnaces in 1920 or planned to do so in 1921.

Company	Completed in 1920	Under construction or projected
Trumbull Cliffs Furnace Co., Warren, Ohio		1
Ford Motor Co., Detroit, Mich.	2	..
St. Louis Coke & Chemical Co., Granite City, Ill.	1	..
Pittsburgh Crucible Steel Co., Midland, Pa.	1	..
Bethlehem Steel Corporation, Maryland plant	2	..
Total	6	1

UNITED STATES STEEL PRODUCTION. The American Iron and Steel Institute's annual summary for 1920 recorded a total output of crude steel for 1920 of 34,432,252 tons, against 36,671,232 in 1919 and 43,051,022 in 1918, but well above the rates in pre-war years. The crude steel output in December was 2,340,365 tons, the lowest of any month in 1920. These statistics covered the operation of 30 companies which in 1919 produced 85.12 per cent of the total American output in that year, and compare with 2,638,670 tons in November, and 3,015,982 in October, a decrease of 675,617 tons in two months.

According to this statement in December the heaviest slump was in open hearth operations, which were 274,699 tons under the figures for November and over 800,000 tons below the high peak in March. Bessemer also showed a reduction, but other grades were but slightly changed. The most material reductions at the end of the year were in independent mills which ran between 50 and 60 per cent of capacity as compared with 90 per cent or more for United States Steel Corporation plants. In connection with the 1920 production it was clearly recognized that the total output in 1920 was from 8,000,000 to 10,000,000 tons below the known capacity of the United States.

Production of all kinds of crude steel from January, 1919, to the end of 1920, are given herewith (figures for last four months of 1919 were not compiled owing to the steel strike):

1919	Open hearth	Bessemer	All other	Total
January	2,351,158	749,846	7,279	3,107,778
February	2,043,635	655,206	5,842	2,704,683
March	2,100,528	555,332	6,405	2,662,265
April	1,732,447	500,770	6,494	2,239,711
May	1,506,015	414,392	8,617	1,929,024
June	1,692,257	521,634	5,328	2,219,219
July	1,875,630	625,246	7,300	2,508,176
August	1,988,651	748,212	9,218	2,746,081

1920				
January	2,242,758	714,657	10,687	2,968,102
February	2,152,106	700,151	12,867	2,865,124
March	2,487,245	795,104	16,640	3,299,049
April	2,056,336	568,952	13,017	2,638,305
May	2,251,544	615,922	15,688	2,883,164
June	2,287,278	675,954	17,463	2,980,690
July	2,135,633	653,888	13,297	2,802,818
August	2,299,645	695,003	5,784	3,000,432
September	2,300,417	693,586	5,548	2,999,551
October	2,335,863	676,634	3,485	3,015,982
November	1,961,861	678,215	3,594	2,638,670
December	1,687,162	649,617	3,586	2,340,865

Total 26,197,843 8,112,753 121,656 34,432,252

COMPARISON OF TOTAL STEEL PRODUCTION BY YEARS

	Tons		Tons
1912	80,284,682	1917	43,619,200
1913	80,280,180	1918	43,051,022
1914	22,819,784	1919	36,671,232
1915	81,284,212	1920	34,432,252
1916	41,401,917		

OPEN HEARTH FURNACES. In 1920 there were completed 20 new open-hearth furnaces with a capacity amounting to 675,000 gross tons and there were under construction 15 new furnaces with a capacity of 430,000 tons. The 1920 increase in capacity compared with 625,000 tons added in 1919, with 1,945,000 tons added in 1918, with 4,326,500 tons in 1917 and with 4,205,000 tons in 1916. The 20 open-hearth furnaces completed in 1920 compared with 9 in 1919, with 46 in 1918, with 97 in 1917, and with 103 in 1916. The 1920 construction was entirely by independent companies for the first time in some years. The United States Steel Corporation made no additions to its open-hearth capacity at any of its plants. In 1919, however, it had put into operation a third 100-ton open-hearth furnace at its Gary works.

The open-hearth furnaces under construction during the year 1920, most of which will probably be completed in 1921, numbered 15, which was the smallest total for many years and compared with 22 projected for 1920, with 16 under construction for 1919, with 35 for 1918, with 72 for 1917 and

total in the world on Jan. 1, 1920, was estimated very roughly at about 815. The combined actual and estimated data as of Dec. 31, 1920, indicated about 961 furnaces of all types in the world's electric steel industry. The total might actually reach 1000. The number, types, and distribution of the various electric furnace installations are shown in the accompanying tables from *The Iron Age*.

TABLE OF ELECTRIC STEEL FURNACE INSTALLATIONS IN THE COUNTRIES OF THE WORLD, 1920

ACTUAL DATA FOR CERTAIN TYPES, WITH OTHERS ESTIMATED
Furnaces

Country	Heroult	Knerrefelt	Grosvener	Edwards	Snyder	Van Beur	Known installations	Other types, estimated	Totals
France	28	2	8			1	39	80	69
England	53	7	38				101	49	150
Germany	17	1					18	82	100
Austria (and Hungary)	10	1					11	9	20
Italy	4		4				8	42	50
Luxembourg	2						2	8	10
Russia	3	7					10	5	13
Switzerland	1	1					2	4	6
Spain	4		6				10	0	10
Belgium	2		1				3	2	5
Sweden	3	38	1				42	8	50
Norway	1	14					15	5	20
Japan	2	2	1	2	4		11	0	11
Roumania	1						1	0	1
Chile		1			1		2	3	5
Mexico					1		1	1	2
Finland		5					5	0	5
Denmark		8					8	0	8
Netherlands		2					2	0	2
Brazil		1					1	0	1
China			1				1	0	1
Australia			2				2	0	2
Other South America			3				3	0	3
India				1			1	0	1
Location not given								20	20
Totals	131	85	65	7	6	294	268	562	

	Jan. 1, 1921	Jan. 1, 1920	Jan. 1, 1919	Jan. 1, 1918	Jan. 1, 1917	Jan. 1, 1916	Jan. 1, 1915	July 1, 1913	March, 1910
Total outside the United States and Canada	562*	...	...	464	316	222	170	118	101
United States	356	328	287	233	136	73	41	19	10
Canada	43	40	43	36	19	8	2	8	3
Total in the United States and Canada	399	368	330	269	155	81	43	22	13
Grand total in the world	961	...	815*	783	471	303	213	140	114

* Largely estimated. * Obtained by adding the known new installations to the estimate for Jan. 1, 1918.

with 91 for 1916. The total estimated capacity of the furnaces projected for completion in 1921 was 430,000 gross tons and included the new Bessemer plant of the Steel & Tube Co. of America, at Indiana Harbor. This compared with 875,000 tons planned for 1920, with 1,130,000 tons planned for 1919, with 1,645,000 tons for 1918 and with 4,515,000 tons for 1917.

ELECTRIC STEEL FURNACES. On Jan. 1, 1920, according to *The Iron Age's* annual review of the electric steel industry, the United States was credited with 323 furnaces of all types, with 40 in Canada. On Jan. 1, 1921, this total has been increased to 356 in this country and 43 in Canada. On July 1, 1913, there were only 19 such furnaces in the United States and three in Canada, or eight and one-half years earlier. The

MONTHLY AVERAGE PRICES OF PIG IRON, 1920

(From *Iron Age* Annual Summary)

	Bessemer pig iron at Pittsburgh	Bessemer steel billets at Pittsburgh	Basic pig valley	Southern No. 2 foundry dry pig at Cincinnati	Local No. 3 foundry, Chicago
	Dollars per gross ton, 1920				
January	40.00	48.00	37.40	41.80	40.00
February	42.90	55.25	42.25	43.60	42.25
March	43.40	60.00	41.50	43.60	43.00
April	43.60	60.00	42.40	44.00	43.00
May	44.03	60.00	43.25	45.60	43.00
June	44.80	61.00	44.00	45.60	43.40

July	47.15	62.50	45.85	45.60	45.25
August	49.11	61.00	48.10	45.78	46.00
September	50.46	58.74	48.50	46.50	46.00
October	49.16	55.00	48.75	46.50	44.50
November	41.10	49.70	36.50	42.50	39.40
December	36.96	43.50	33.00	41.10	34.50

MARKET CONDITIONS OF 1920—UNITED STATES. The year in the iron and steel industry was extraordinary in many respects. Prices rose steadily at the beginning of the year reaching a peak from which there was a steady and continual decline until the end of the year. There were maintained in the industry two sets of prices, the United States Steel Corporation maintaining the prices set by the so-called Industrial Board on March 21, 1919, while the independent producers taking advantage of the active demand due in large measure to the scarcity of steel in 1919 were able to secure very high prices on a certain amount of the year's business, in a few instances reaching a maximum of four cents a pound for plates and shapes and 8.50 cents a pound for No. 28 black sheets, when the latter were quoted at 4.35 cents by the Steel Corporation. In other words while the Steel Corporation sold bars at 2.35 cents, plates at 2.65 cents, and structural shapes at 2.45 cents at Pittsburgh, the independent companies were able to secure for most of the year three cents to four cents for bars, 3.25 to four cents for plates and three to 3.50 cents for structural shapes. Accordingly the range of prices from the date of the announcement of the schedule of the Industrial Board in March, 1919, to Dec. 16, 1920, as given by *The Iron Age* is of interest and is shown herewith.

INDEPENDENT PRICES OF BLACK SHEETS, TANK PLATES, BEAMS, AND STEEL BARS, GROSS TONS, MARCH 21, 1919, TO DEC. 16, 1920

1919	Black sheets No. 28	Tank plates	Beams	Steel bars
April	\$97.44	\$59.36	\$54.88	\$52.64
May	97.44	59.36	54.88	52.64
June	97.44	59.36	54.88	52.64
July	97.44	59.36	54.88	52.64
August	97.44	59.36	54.88	52.64
September	97.44	56.67	54.88	52.64
October	97.44	58.46	54.88	58.54
November	97.44	59.36	54.88	60.26
December	97.44	59.36	54.88	61.60
1920				
January	100.24	60.98	55.33	61.60
February	112.00	78.40	60.48	67.20
March	123.20	81.81	70.11	81.81
April	123.20	84.00	72.80	84.00
May	128.20	84.00	69.44	81.31
June	128.00	79.52	69.44	78.40
July	151.20	75.71	69.44	78.40
August	168.00	72.80	69.44	72.80
September	165.20	72.80	69.44	72.80
October	149.85	69.22	68.32	70.11
November	129.24	62.94	64.74	64.28
December	97.44	59.36	54.88	52.64

UNITED STATES STEEL CORPORATION PRICES, GROSS TONS, MARCH 21, 1919, TO DEC. 16, 1920

Black sheets	Tank plates	Beams	Steel bars
\$97.44	\$59.36	\$54.88	\$52.64

Such a situation as outlined, however, needs explanation. The Steel Corporation in 1919 had sold to regular customers a large part of its future product, entering 1920 with 8,265,000 tons of unfilled orders on its books. Naturally it was not in a position to make prompt deliveries on outside orders which accordingly went to the independents at correspondingly increased prices. The switchmen's strike in April prevented production and distribution in large

measure and consequently added to the uncertainty which the shortage and belated production of the previous year had developed. In some industries, notably the automobile trade, steel was demanded at almost any figure and prices accordingly were forced up. In June the automobile industry began to slacken and then by September, other customers reduced their demands. There were many cancellations on orders in October and November so that by the end of that month and the middle of December prices were reaching the level set by the Steel Corporation. At the end of the year the Steel Corporation was operating on an 85 to 90 per cent basis, while the independent companies with few contracts ahead and having realized on their prompt deliveries at high prices were putting out somewhat less than one-half the output of the Steel Corporation.

EXPORTS FROM THE UNITED STATES. In regard to exports Department of Commerce reports compiled at the end of the year indicated that there was a gain of close to \$1,000,000 in the exports of iron and steel products in November over the preceding month, or \$104,837,628, against \$103,998,528 as compared with \$73,930,228 in November of 1919. This indicated an export trade for 1920 somewhat in excess of \$1,000,000,000. The November figures made a new record for any month since June, 1919. In view of the numerous difficulties of adverse exchange and of credits in the iron and steel markets of the world the volume of export was considered remarkable.

During the year there was manifested an increase in machinery exports, with gains also in wire, bars, rails, pipe, nails, cutlery, and track material. On the other hand a serious decline was shown in pig iron, iron ore, and scrap. This indicated clearly a heavy competition experienced in foreign markets by American exporters from Belgian and German interests, and lower consumption in general. Imports of iron and steel into the United States in November dropped to \$3,854,950 from \$4,851,522 in October and \$3,621,053 in November, 1919. As against an increase of 9 per cent in exports of 11 months of 1920, compared with 1919, imports gained over 100 per cent as the figures for 1920 showed \$47,348,319, against \$23,366,959 in 1919.

BRITISH IRON AND STEEL INDUSTRY. In Great Britain the iron and steel production in 1920 suffered from the coal strike and according to the report of the National Federation of Iron and Steel Manufacturers, the production of pig iron, fell from 741,000 tons in September to 533,200 tons in October and 403,200 tons in November. However, it rose in December to 675,300 tons, making the total production for the year 8,000,700 tons, compared with 7,398,000 tons for 1919. The production of steel ingots and castings, which fell from 834,700 tons in September to 544,300 tons in October and 505,100 tons in November, rose to 745,400 tons in December, bringing the total for the year up to 9,055,600 tons, compared with 7,894,000 tons in 1919.

IRON AND STEEL EXPORTS, 1919-1920, BY MONTHS

	1920	1919
January	\$70,226,411	\$81,778,426
February	71,893,929	85,328,456
March	98,756,388	84,621,054
April	87,496,643	88,896,975
May	99,461,058	88,899,126
June	87,496,643	121,036,322

	1920	1919
July	92,147,844	60,275,110
August	89,065,843	75,826,285
September	87,556,292	73,376,508
October	108,998,528	76,157,191
November	104,627,626	74,626,804
December		60,399,425

It must be borne in mind that a serious result of the war had been to keep British iron and steel products out of the export markets, while America also being similarly occupied, British colonial and foreign customers as never before had been forced to their own resources and naturally some developments resulted. Australia, New Zealand, South Africa, Japan, and even China, all erected large steel and iron works during or just after the war, and these, it was feared, would be increased and would act seriously to decrease British export trade.

Furthermore, in 1920, British manufacturers suffered seriously from the lack of transport facilities. While customers were clamoring for steel products finished and ready for shipping the railway facilities were utterly inadequate, and the goods were lying about the yards waiting for cars. An important effect suffered by the manufacturers was the locking up of capital, and the payment of interest at the onerous rate prevailing in the scarcity of money.

In 1920 there was an absence of serious labor troubles and the introduction during the war of labor saving machinery had contributed to the general efficiency of the industry. Reduced labor hours and a decreased output were considerations that were debated as to their immediate and remote effects on the industry.

In the British Board of Trade statistics on foreign trade in iron and steel products and coal for the calendar year 1920, comparing it with the preceding year and with the year before the outbreak of the war, it was shown that with the exception of new rails, which were unchanged, all materials were on the decline in December as compared with 1919 and considerably under the figures for 1913. However, with the exception of coal exports, which were over 10,000,000 tons below 1919 and 48,500,000 under 1913, iron and steel shipments in the calendar year 1920 were well above the totals for 1919 and close to the aggregates for the pre-war year.

The following is a comparison:

	Tons—000 omitted		
	12 months		
	1920	1919	1913
Total iron and steel	3,253	2,283	4,969
Pig iron	579	357	1,124
New rails	185	126	507
Galvanized sheets	411	186	762
Tin plates	853	289	494
Coal	24,982	35,250	73,400

The British iron and steel industry indeed ran a spectacular course in 1920 which included an extraordinary boom reaching its high water mark in the early autumn. The crest of the boom brought prices to a level twice as high as that scored in the previous great boom after the war of 1870, which trade historians recalled was followed by a decline that brought prices down to an unheard of level where No. 3 pig iron sold at less than 30 shillings a ton and new steel rails at 75 shillings a ton. The end of the year 1920, in the opinion of many trade authorities was witnessing the beginning of a

slump. However, in the present record it is of interest to trace the movement of prices from the beginning of the year to their high mark and these are summarized herewith:

COMPARATIVE PRICES PER GROSS TON OF FINISHED STEEL		
	Jan. 1	Oct. 1
	£ s	£ s
Bar iron	23 0	30 0
Iron bolts and nuts	45 0	57 10
Steel strips	22 0	28 0
Steel bars (5 to 8 in.)	19 10	26 10
Steel sheet bars (semi-steel)	18 0	21 0
Steel hoops	26 15	38 15

Now with the high prices of iron and steel products naturally there came increased imports into Great Britain from America and the Continent. Prices at the end of the year in Great Britain and at Continental ports for similar products were as follows:

	British at works, per ton	Continental at ports, per ton
	£ s	£ s
Steel billets, rolling quality ...	17	11 15
Steel bars up to 6 in.	26	17 0
Bar iron	30	20 0

At the top of the boom No. 3 pig iron varied in the different markets, the Cleveland iron trade endeavoring to steady prices and prevent a runaway market. The high prices of 1920 as given below for the various districts together with those at the end of the year can be compared with prices of £2 10 s to £3 10s per ton before the war.

VARIOUS PIG IRON PRICES PER TON AT TOP OF BOOM AND AT END OF 1920

	£ s	£ s
Cleveland	11 5	11 5
Scotch	13 10	13 0
Derbyshire	14 0	18 0
Staffordshire	14 10	13 10
Lincolnshire	14 5	13 10
Northamptonshire	18 0	12 6

Naturally with the high prices prevailing in the British markets imports increased.

BRITISH RECEIPTS OF BILLETS FOR 10 MONTHS COMPARED

	1913	1919	1920
From Germany, tons	243,458	none	11,047
From Belgium, tons	89,240	514	
From United States, tons ...	64,945	30,335	200,394
From all other countries, tons	22,324	12,226	

The above statistics indicated that where during 1919 Germany was unable to export at all and Belgium was not in a much better plight, France had begun to work and the comparatively high prices attracted imports from the United States. In 1920 increased demands and local high prices led to considerable importing of foreign billets, the total imports for the 10 months being 211,441 tons, against a total of 43,075 tons in 1919. Germany, however, was only beginning to send billets to Great Britain up to October and the bulk of the imports came from the United States and from "other countries" including France, viz., 200,394 tons out of 211,441 tons.

BELGIAN IRON AND STEEL INDUSTRY. Belgian manufacturers during the year suffered from competition from Germany during 1920 in their efforts to reestablish their industry on its for-

mer basis. An agreement made between the iron men of France, Luxemburg and Belgium to maintain prices, failed during the year and pig iron prices became lower with a deep depression in the Belgian iron and steel market at its close. The costs of fuel, wages, and transportation at the close of the year were said to be such as to render impossible profits at the prevailing prices for finished materials, especially with a decreased demand. There were during the year 1920 exports to Great Britain totalling some 33,903 tons as against 5547 in 1919, an amount not quite half the exports to that country in 1913.

Belgium's exports of iron and steel for the 10 months ended November 30 are reported as follows:

	10 months ended Nov. 30, 1920	10 months ended Nov. 30, 1913
	Tons	Tons
Billets	8,000	89,000
Blooms	5,000	36,000
Beams	43,000	83,000
Rails	37,000	136,000
Sheet iron	110,000	162,000
Bars	324,000	532,000
Wire	35,000	46,000
Wrought steel	48,000	116,000
Rolling stock	14,000	109,000

Belgium at the end of 1920 was offering iron bars at £15 12s 6d, billets at £11 10s and finished steel at £14 10s, all delivered in the Midlands. German products were competing with Belgium and at the end of the year it was reported from Sheffield that marine forgings were being offered there by German makers at 50 per cent less than the prices quoted for the British made commodity.

GERMAN IRON AND STEEL INDUSTRY. The German iron and steel plants were active in 1920 and for the majority of them the year was considered one of prosperity, notwithstanding many adverse conditions. It was believed that the production of steel would run ahead of that of pig iron as there was much scrap and old material coming on the market which was utilized in the open hearth steel plants. One of the tendencies of the year in the iron and coal industries was the organization of a number of big trusts, on a greater scale than ever before. This gave rise to many interesting political and commercial speculations, and the opinion was advanced that it was a movement on the part of German iron and coal magnates to annex various coal fields and so combine the various industries by what was known as "vertical annexations," so that there would be a single organization including iron ore and coal mines, blast furnaces and steel plants, rolling mills, and even down to machine shops, that could turn out electrical and other machinery. Such consolidations were economically necessary as with the loss of large and efficient plants in Lorraine and Luxemburg as a result of the Versailles treaty, the most economical and complete organizations for effective production with the cutting out of incidental losses was necessary. This naturally involved the turning out from raw material of highly finished products with a minimum of lost motion. Notwithstanding the loss of the ore fields, during the year German iron works were receiving the minette ores and also they were using their own ores together with Swedish and Spanish ores, foreign supplies figuring to an extent of from 50 to 75 per cent at the

end of the year, with rumors that German iron masters were securing iron and manganese ore fields in Brazil and the Black Sea regions.

In Germany, as elsewhere in the iron and steel business, there was in 1920 an advance of prices followed by a decline, caused in fact by the depreciation of the German mark in the final months of the preceding year. The price movement of the year as given in the foreign correspondence of *The Iron Age* (New York), is summarized for four staple products below, prices being quoted in marks per metric ton (2205 pounds):

	Foundry iron, No. 1	Best steel scrap	Blooms	Bars
January	1324.50	1300	1465	1745
March	1625	2700	2225	2600
May	1790.50	1200	2900	3650
July	1740	600	2650	3200
October	1660	1025	2360	2840
November	1660	850	1895	2440
December	1660	875	1895	2440

In 1920 German manufacturers were active with export business, occupying to a large degree the markets of Holland, where some three-fourths of the iron and steel imported was said to be from Germany. France and Belgium were beginning to compete vigorously in this field, while even the Dutch manufacturers were asking for protection on the finished products of the Dutch boiler, machine, and motor shops. In 1920 there were also exports from Germany to the Scandinavian countries. In the second half of the year France began to figure as a more active competitor in the foreign market, a condition made possible by the increased coal and coke supply. At the same time in accordance with the Spa agreement in July, increased coal deliveries were required from Germany so that the supplies available for iron and steel production were greatly reduced and on account of lack of fuel some of the largest plants had to shut down a number of their furnaces.

All things considered German iron and steel companies had a year of prosperity and large earnings, setting aside large amounts for betterments and renewals and in some cases increasing their capital. During the year a new steel works began operation at Düsseldorf, the Mannstaedt Company erected new blast furnaces, while other plants were engaged in improvements, certain concerns in the Silesian district building new open-hearth plants. Even with the vastly increased costs of labor and plant, much new work was under way and many of the great western companies were engaged in sinking new shafts.

An interesting tendency of the year was the increased attention that was being made to fuel economy for the very obvious reasons already mentioned. Like other German ventures it was attacked through an organized technical commission, the "Waermestette," or fuel economy section of the Verein Deutschen Eisenhütteleute, and some 200 experts were engaged from the middle of 1919 to work in conjunction with plant engineers to save fuel. Independent research was also carried on and surprising results in fuel economy were secured. Savings of coke also were made by using rich foreign ores and much scrap in furnace charges. Many metallurgical developments had resulted during the war, a number of which were adopted as standard practice. Churchbells of electric steel were said to answer as well as those of bronze while the use

of lead instead of tin in brazing metals was also an economy. Several improved machines such as one for drilling holes in ship and boiler plates and a simplified drill of electric steel more economical than the spiral drill, were brought out during the year.

See also *Iron and Steel* under **METALLURGY**.

IRRIGATION. See **RECLAMATION**.

ISOTOPES. See **PHYSICS**.

ISTRIA. Before the downfall of the Austro-Hungarian empire a crownland of the former kingdom of Austria, consisting of a peninsula extending from Trieste and Carniola to the Adriatic Sea; comprised after 1918 in the new state of Jugo-Slavia. Area: 1914 square miles; population according to census of Dec. 31, 1910, 403,566, of whom 43.52 per cent spoke Croatian; 38.15 per cent, Italian; and 3.3 per cent, German. Capital, Capodistria with a population of about 9000 in 1910. See **JUGO-SLAVIA**.

ITALIAN. See **PHILOLOGY**.

ITALIAN SOMALILAND. An Italian colony and protectorates on the east coast of Africa, extending from British Somaliland southward to the Juba River. Area, about 139,430 square miles; population about 450,000. It consists of three protectorates, namely, the Sultanate of the Mijertins, the territory of the Nogal and the Sultanate of Obbia, and of the colony which comprises four administrative divisions. In 1918, the imports were valued at 14,827,370 lire and the exports at 6,064,782 lire. The budget for 1919-20 was as follows: Revenue 7,471,000 lire; expenditures, 7,467,000 lire. Governor in 1920, Carlo Riveri.

ITALY. A constitutional monarchy in southern Europe comprising Italy proper, the islands of Sardinia, Sicily, Elba, and between 60 and 70 small islands, together with territory on the eastern coast of the Adriatic Sea whose limits at the close of 1920 were subject to the execution of the Treaty of St. Germain and the arrangement with Jugo-Slavia. (See **JUGO-SLAVIA** and **WAR OF THE NATIONS**). Area before the war, 110,632 square miles; pop. estimated, Jan. 1, 1915, 36,120,118. For details, see preceding **YEAR BOOKS**. Emigration, 1918: 28,311, of whom 24,301 went to European or Mediterranean countries, and 4010 overseas (2739 to the United States). In 1918, 9025 Italians returned to Italy (8763 from the United States). Capital, Rome, with a population estimated Jan. 1, 1915 at 590,960; other large cities: Naples 697,917; Milan 663,059; Turin 451,994 and Palermo 345,891.

EDUCATION. No later figures for elementary education were available than those given in preceding **YEAR BOOKS** which gave the public elementary schools at 120,196 in 1916 with 3,792,024 pupils and 75,993 teachers. In 1916-17 the students in universities numbered 29,075.

PRODUCTION AND INDUSTRY. Of the total acreage, namely, 71,652,592, about 65,995,000 were under crops and 5,662,500 were waste lands. The following table shows the acreage and production in cwt. of the principal crops for 1918 and 1919:

	Acreage		Produce in Cwts.	
	1918	1919	1918	1919
Wheat..	10,914,250	10,694,000	99,776,000	92,296,000
Barley..	488,500	485,500	4,218,000	3,626,000
Oats...	1,228,525	1,142,750	13,166,000	10,080,000
Maise...	3,598,000	3,757,350	38,798,000	43,498,000
Rye....	278,000	276,500	2,658,000	2,822,000
Rice...	346,000	329,250	10,470,000	9,784,000

Beans..	1,077,000	979,000	8,362,000	5,948,000
Potatoes.	747,250	770,250	28,198,000	27,726,000
Sugar				
Beetroot.	107,000	107,500	22,920,000	28,000,000
Vines..	7,261,000	10,759,000	1,237,632	726,000
Olive...	5,750,000	5,786,750		852,000

¹ Produce in thousand gallons.

The production of silk cocoons for 1920 was placed at 59,500,000 pounds, as compared with 43,500,000 pounds for 1919. While the 1920 crop showed an increase (about 37 per cent) over the previous year, it was still considerably below the average production for the 10 years from 1910 to 1919, which was 77,500,000 pounds. Italy's production of cocoons greatly decreased after the country's entrance into the war in 1915. The average from 1910 to 1914 was 88,853,440 pounds. Raw silk has been the most important commodity in Italy's export trade from the standpoint of value, especially so far as the United States is concerned. In 1919, of Italy's total exports to the United States of about 453,000,000 lire, 189,000,000 lire was made up of raw silk and silk waste. See **AGRICULTURE**; **AGRICULTURAL EXPERIMENT STATIONS**; and **AGRICULTURAL EXTENSION WORK**.

In 1918 the mineral output was valued at 369,753,447 lire and employed 59,962 workers.

The following table gives the estimated mineral production in Italy during 1920 as compared with production in 1919:

Minerals	1919 Tons	1920 Tons
Iron ore and ferro manganese..	465,655	423,300
Manganese ore.....	30,841	29,140
Copper ore.....	16,653	6,860
Lead ore.....	32,130	36,325
Zinc ore.....	65,629	98,090
Silver	8,240	500
Antimony	10	125
Iron pyrites (inc'd'g cupriferous)	372,474	322,450
Mercury	548	1,325

Minerals	1919 Tons	1920 Tons
Fuel:		
Lignite		1,662,430
Anthracite	1,158,541	28,600
Coal (Triassic).....		120,715
Bituminous shale.....		22,000
Shale (ichthyolic).....		495
Sulphur, raw and ground.....	255,316	298,000
Petroleum	4,851	4,750
Asphalt and bituminous rock...	78,635	108,600
Bauxite		37,980
Graphite	7,626	4,190

FOREIGN TRADE. The following table shows the imports and exports in thousands of dollars for the years 1913, 1918 and 1919:

Date	Imports	Exports
1913	\$703,608	\$484,746
1918	2,820,329	496,705
1919	3,803,281	1,037,724

In 1919 the leading imports in respect to value were: Wheat, raw cotton, coal and coke, and wrought iron and steel, and the leading exports were: Cotton manufactures, raw silk, silk manufactures, hemp, fruits, and wines. The chief origin of the imports was the United States as in the preceding year and the chief country of destination for exports was France as in the preceding year.

RAILWAYS. The following information was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920:

Railway transportation in Italy at the close of the war presented two distinct problems: The reorganization of existing facilities, including the repairing of existing rolling stock and the purchase of additional equipment; and the extension of the old system through the construction of new lines, in order to meet the growing needs of the country for means of communication. In spite of the efforts made by the government to afford relief, the inadequacy of the Italian railway service, which made itself felt soon after the signing of the armistice, continued in 1920; and the inability to obtain the reasonably prompt movement of goods, either raw materials or finished products, was by no means the least of the many difficulties with which Italian industry and commerce were confronted. During the war all of the belligerent nations were obliged to postpone railway repairs which would normally have been effected immediately, and Italy was no exception to the rule. Consequently, on the signing of the armistice, the few large Italian establishments which were in position to carry on work of this character, found themselves faced with an accumulation of repairs and orders for new equipment sufficient to occupy their entire capacity for several years. Furthermore, in 1919-20, they were severely hampered in the matter of production on account of the constant shortage of raw materials (notably steel and coal) and repeated labor troubles, resulting in long-drawn-out strikes and enforced periods of idleness. Since the same demand for railway material existed in other countries, the measure of relief that it was possible to obtain from the outside was limited, and progress with regard to the rehabilitation of Italian rolling stock was slow. As to the lack of coal, it suffices to say that at no time after the end of the war did the supply of coal exceed more than one-half of the quantity normally consumed, and that the Italian railroads were obliged to eke out their scanty allotment by employing lignite, wood, and other unsatisfactory substitutes. Of necessity, irregular service resulted.

With regard to new construction, the execution of new projects for railway extension in Italy, which had already been approved, was necessarily held up during the war, except where these presented some special military advantage; and, owing to the shortage of steel for munitions, etc., it was even found necessary, in certain cases, to dismantle sidings and double-track lines that were not considered essential. After the armistice special attention was devoted by the government to the railway problem, but the high prices, both of materials and labor, and the difficulty of obtaining the former at any figure, constituted a serious obstacle to rapid progress with regard to new construction, especially as far as private undertakings were concerned.

When the principal railway systems of Italy were taken over by the government on July 1, 1905, and became the Italian State Railways, their length was about 6961 miles, while the length of the roads which continued under private management was about 1924 miles, making a total mileage for the Italian railroads on that date of 8885 miles. In 1920 the length of the state railways was slightly in excess of 9920 miles and that of the private roads about 3845 miles, making a total of about 13,765 miles, so that during the past 15 years Italy's railway mileage had increased approximately 55 per cent,

the annual average of new construction being 325 miles.

The following information was supplied by the *Railway Age*. A project announced during the year called for the electrifying of 2750 miles and the laying of 6070 miles of new rails. The plan involved (1) the immediate electrifying of 803 miles and the laying of 1780 miles of rails; (2) the electrifying of 635 miles and the laying of rails over 1410 miles in the period immediately following the execution of the first group; (3) the electrifying of 1080 miles and the laying of rails over 2640 miles by private industry; and (4) the electrifying of 158 miles and the laying of rails over 242 miles, in which group experiments were to be made with new methods of electric traction. The government for this work apportioned about \$154,000,000 to be distributed over eight periods, about \$11,600,000 to be expended in the financial year 1920-1921.

New construction as well as operation had to be considered in view of the large deficit on the Italian railway. This deficit on the Italian government railways for the fiscal year ending June 30, was reported to be \$163,400,000.

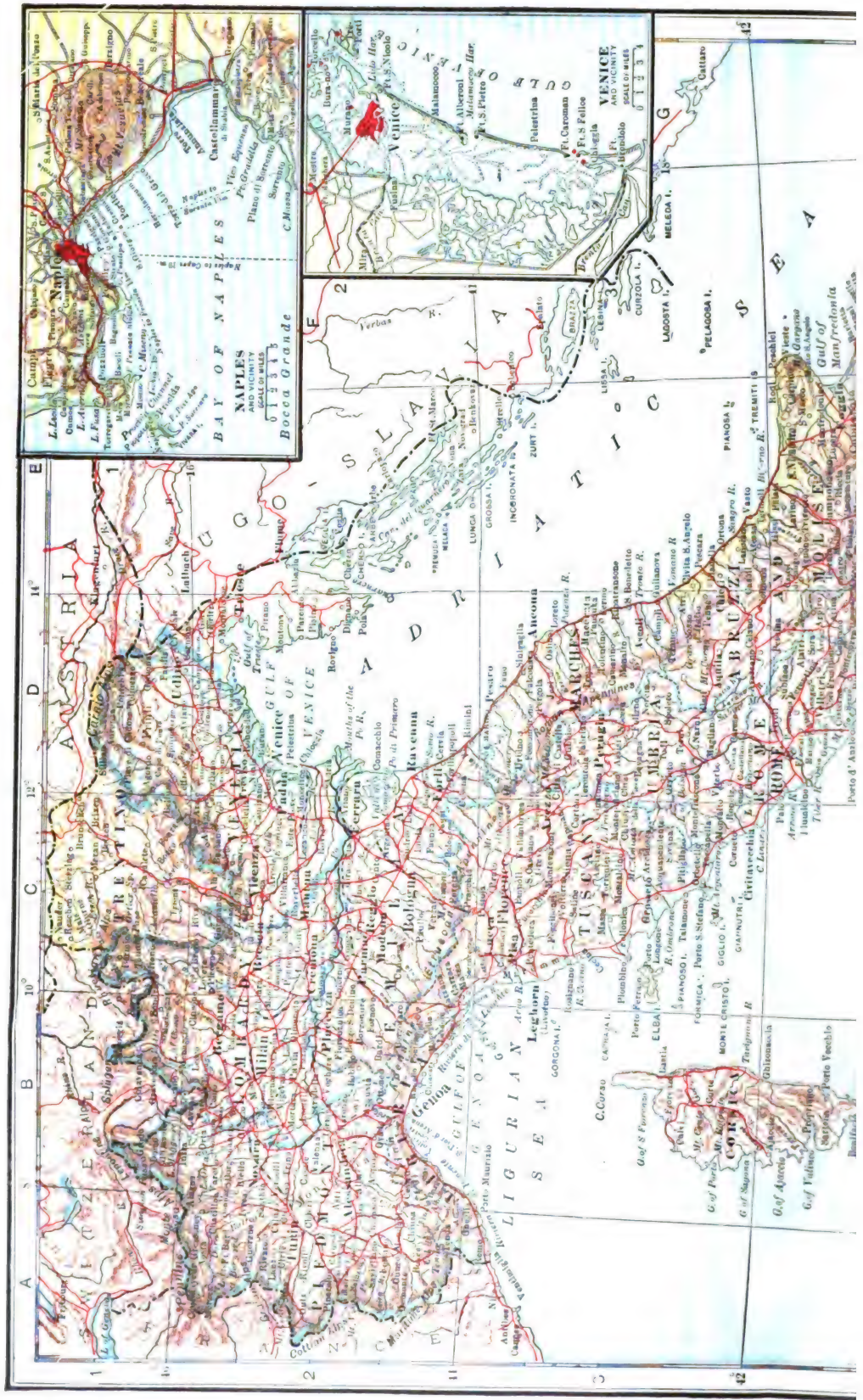
The total revenue from all sources was \$415,910,000 and the total expenses \$579,310,000. In an addition it was suggested that this figure for the deficit was probably too small considering the deterioration of the lines during the period due to the lack of adequate maintenance.

FINANCE. On June 27 Minister of the Treasury Meda made the following statement on the financial position of the Italian government: The total revenue of the government for the coming year, 1920-21, was estimated at 10,500,000,000 lire (lira at par of exchange = \$0.193). Its ordinary expenses, however, were estimated to be 11,535,000,000 lire. This was an increase of 3,066,112,000 lire, or about 36 per cent, over the estimate of 8,468,888,000 lire made in December, which increase was principally accounted for by the necessary increases in the salaries of government employees during the time which had elapsed since then. On this basis, expenses would exceed the estimated total revenue by about 1,000,000,000 lire. Moreover, 1,500,000,000 lire of the revenue was of a temporary character.

For extraordinary expenses, it was stated that in spite of the notable reductions already made, an estimate of less than 13,200,000,000 was not justified, this amount being made up for the most part by the following items:

	Lira
Deficit in connection with food supplies, not including the cost of transportation	5,500,000,000
Additional deficit in the administration of State railways	600,000,000
Recent allowances to employees on account of high cost of living	650,000,000
For Ministries of War, Navy, and Colonies	2,850,000,000
For the new territories, including the settlement of claims for damages	2,000,000,000
For marine transportation, including the cost of transporting foodstuffs (estimated at 800,000,000 lire)	1,200,000,000
Pensions, etc.	300,000,000

Unless additional revenue is secured, on the basis of the estimates just given, there would be a deficit of about 14,000,000,000 lire. The Minister of the Treasury, in giving these figures, justified the radical financial measures just presented to Parliament for enactment into law, and



pointed out that, in addition to the revenue which it was hoped these would provide, during the last half of the year the receipts from new taxes, etc., already in effect, ought to afford considerable relief. Furthermore, an improvement in the general economic situation of the country and a rise in the purchasing power of the lira abroad would make possible large savings over the above estimates.

DEFENSE. The strength of the field army at the end of 1919 was placed at about 800,000 and measures had been proposed to reduce it gradually to 250,000. According to figures published by the United States War Department the permanent Italian army at the end of 1920 numbered 350,000, while its total forces including reserves was placed at 4,163,000. The following table shows the number of war vessels that were completed at the end of 1920:

	Completed at the end of 1920
Dreadnoughts	6
Pre-dreadnoughts	6
Armoured cruisers.....	5
Protected cruisers, scouts and flotilla leaders..	23
Torpedo gunboats, etc.....	4
Destroyers	50
Torpedo boats	74
Submarines	80

See NAVAL PROGRESS.

GOVERNMENT. King, Victor Emmanuel III., born Nov. 11, 1869; succeeded to the throne, July 29, 1900; prime minister in 1920, G. Giolitti. For constitution of the ministry see *History* below.

HISTORY

CABINET CRISIS. Railway and postal strikes paralyzed industry during January. They arose from a demand for increase in wages, reduction of hours and government recognition of unions. The government in reply offered bonuses and shorter hours, but declined to recognize the unions. Discontent of the working classes continued and resulted in movements described in the press as amounting to an industrial revolution (see paragraphs below). A ministerial crisis occurred in March, after a debate lasting for several days and resulting in a hopeless deadlock. The prime minister, Nitti, re-organized his cabinet on March 13. It contained no representatives of the Catholic party, the Popular party, or Socialists. Its programme announced, March 22, included a policy of conciliation toward Jugoslavia, the renewal of economic relations with Germany and Russia, and financial retrenchment. It seemed to have the support of the Chamber as was shown by a vote of confidence, March 31, of 250 to 195. On May 11, the government was defeated by a vote of 193 to 112, and an attempt to reconstruct the cabinet with the inclusion of Catholics followed, but the government could not stand in face of the Socialist opposition and resigned, June 9. In the following week a new ministry was formed, under the former prime minister, Giovanni Giolitti. It was constituted as follows: President and minister of the Interior, Francesco Tedesco (Liberal); Colonies, Luigi Rossi (Liberal); Finance, Francesco Tedesco (Liberal); Public Works, Camillo Peano (Liberal); Liberated Provinces, Giovanni Raineri (Liberal); Treasury, Filippo Meda (Catholic); Agriculture, Giuseppe Michelli (Catholic); Justice, Luigi Fara (Radical); Industry, Giulio Ales-

sio (Radical); Posts and Telegraphs, Rosario Pasqualino-Vassallo (Radical); War, Ivanoe Bonomi (Socialist); Labor and Social Welfare, Arturo Labriola (Socialist). Three non-political experts were also included: Count Carlo Sforza, Foreign Affairs; Admiral Giovanni Sechi, Navy; Prof. Benedetto Grace, Education.

AGRARIAN REVOLT. Seizure of landed estates by the peasants developed during the summer and autumn into a systematic movement and in many parts of the country new local authorities supplanted the central government. According to reports published in October the conditions indicated a social revolution but in the main peaceful. It was described by French writers as a sort of peaceful *Jacquerie* whereby the working and peasant classes were rapidly gaining possession of the land. It originated according to them in the demand of the government during the war that agriculture should produce more and that the motive of production should be the welfare of the entire people. The Socialists had taken advantage of this and urged the peasants not only to destroy what remained of the old feudal tenure but actually to assume ownership of the land. After the war, the movement was aided by over-population and insufficient emigration, which caused a general lack of employment. The centre of the new movement was Bologna, the seat of the federation of agricultural workmen. At the beginning of 1920 this association had 500,000 adherents and it rapidly increased during the year. Its programme called for the socialization of the soil and its policy consisted in annulling the rights of owners, and forcing upon them a rigorous contract for the cultivation of the soil; in invading private estates, whether large or small, and placing them under a coöperative system of culture under the national federation of agricultural coöperatives, founded in December 1918. The extent of the territory under this collective system was increasing daily during the year. Associations were rapidly formed and under their direction posts were set up in pastures, olive groves, vineyards and agricultural lands flying the red flag with the inscription "Requisitioned by such and such a Coöperative." These acts were ratified in many instances by the authorities. The process was extremely simple. In the words of a well-known Italian Socialist, all that was necessary to bring about a revolution in any municipality was to replace the portraits of the King by the portraits of the commissary of the people. It was reported that in the province of Rome more than 100 communes covering an area of 13,000 hectares had been expropriated in this manner. The following instances were given as illustrative: The Marquis of Terraioli was deprived in this manner of 1000 hectares and the Princess Altaire was deprived of 888. A Spanish proprietor, the Duke de Bivona in Sicily, was besieged three days in his castle which the people pillaged. The Countess de Cambray-Digny was besieged in her villa near Florence. The estate of a celebrated singer Mattia Baltistini was seized and held for months by the peasants. It was reported that in three provinces of Sicily 100,000 peasants had possessed themselves of the great estates; that in Tuscany bands of peasants with the red flag at their head traversed the fields, invaded farms, burned down store-houses of grain and forage, stole farm implements and pillaged houses. In some parts of the country murders

were reported and acts of violence were said to have been committed in the liberated regions of Venetia and in the provinces of Cremona, Ferrara and Reggio. In the province of Emilia 190 incendiary and other attacks on property were reported, May-December. To a certain extent the government ratified acts of dispossession in that it recognized the occupation for a fixed period of time of lands that were uncultivated or ill-cultivated. It was reported, however, that the invaders made no distinction between the cultivated and the uncultivated lands and that certainly they did not regard their occupation as a temporary one. Nominally the principle of compensation was recognized but as a matter of fact it was said to be practically ignored. In the neighborhood of Bologna and Reggio associations of colonists, small farmers and day laborers determined the hours of labor, the kind of cultivation, rate of wages, distribution of manual labor and employment of machines, according to rules laid down by local bodies affiliated with the federation. Protest was useless and disobedience was severely punished. It was reported, for example, that a peasant who tried to dispose of his crop without regard to the order of requisition of the Bologna bureau of labor was shot and killed and that farmers who had attempted to thresh their wheat were lynched. The federation refused to treat with the association of landowners of Bologna, but would treat only with each individual owner. The union organizations completely controlled the situation. Writers who visited Italy at this time (October) declared that at that moment the individual right to property in the whole province of Emilia had ceased to exist. It was a system of collective purchase and collective farming. The unions fought against any attempt to build up private estates and whoever tried to acquire private property in land for this purpose was boycotted. It was described as a system of trusts in the interest of the agricultural workingmen—a trust of manual labor, a trust of farm implements, and trusts of purchase and sale. The experiment in the Bologna region was described as a particularly thorough-going one. The revolutionary organizations at the beginning of October were about to dispose of the real estate of the religious foundations amounting to 500,000,000 lire. At the close of the year, however, a partial return to the old régime was reported and the agrarian dictatorship in the provinces of Emilia and Bologna was said to have completely failed. The central authority had counted for little in this result which was chiefly due to the organization of bourgeois groups which in view of the importance of the government fought violence with violence.

Meanwhile the industrial workers were engaged in a similar warfare with the capitalist employers.

LABOR AND THE CONTROL OF INDUSTRY. By September, a large number of factories especially in the metal-working region were in the hands of the workingmen and on many of them red flags were flying. Soviets had been set up in a large number. The conditions resulting from the war, especially in those industries which had developed in order to meet the necessities of the war, such as the metal industry, left large establishments without the means of continuing their activities. The discharge of the workingmen would lead to a labor war which might have serious results.

The reduction of the output to a pre-war basis would be satisfactory to neither the employees nor the employers. At this crisis the workingmen forcibly took possession of the shops. The government remained neutral until the situation resulted in a spirit of compromise on the part of both the employers and employees, whereby the latter moderated their demands and the employers agreed to admit the participation of the workingmen in the direction of industry. Thereupon the government offered to arbitrate on the basis of a combination for control between the workingmen and employers. The representatives of both sides were invited to a conference by the prime minister on September 15 and as a result, the employers admitted the workingmen as participants in control, but not as the dominant factor. It was also agreed that the workingmen should evacuate the plants. The confederation of employers held a meeting at Milan and ratified this agreement and the metal-workers voted their approval of evacuation in a referendum of September 26 by vote of 127,904 against 44,531. The General Confederation of Labor as represented by the Commission of Workers drew up a programme containing the following main points: The employers were not to resort to artificial industrial crisis; they must prevent "dumping"; they must admit the Workers Council to participation in the purchase of raw materials and in the unloading of goods and must allow it to superintend the sale and fix the price of finished products, to superintend the grading of wages, to assign work to employees according to their abilities, to oversee the general expenses and limit the expenses of present owners, to decide when new machinery was needed, to supervise sanitary conditions, etc. The government was criticised by certain public men, but in general it seemed to have the support of the country. Its attitude was defined by the prime minister in a programme published in a leading official newspaper. This declared that the system in which single men could control thousands of others who had no redress, was no longer possible. Workingmen must be placed in a position in which they can contribute to its administration. They must have a share in the responsibility. The Popular or Catholic party issued a manifesto demanding co-operation between the employer and employee, the safe-guarding of legitimate private ownership, and an inquiry under government control into the present state of industry and into the need of land reforms.

Among the aspects brought out in the press in regard to the labor situation the following may be noted. In industry the mass of the workingmen were gaining the upper hand. The middle or capitalist class had tried in vain to control the situation. The lowering of the rate of exchange and the increase in the cost of living had thrown things into confusion and in the presence of the general unrest even the constitutional parties had yielded to the demands for reform. Thus in the programme of the Catholic party itself were found such reforms as woman suffrage, general establishment of coöperative production, internationalization of raw materials and transport. The government had gone to astonishing lengths in its financial measures. The land system under the pressure of some 700,000 or 800,000 laborers was undergoing radical changes from day to day without any interference on the part of the state. Landed property was rapidly pas-

sing into the hands of those who cultivated it while workingmen were invading uncultivated lands and taking possession of them for the purpose of exploiting them. These changes were effected with far less violence than might have been anticipated and this was no doubt due to the moderation of the government. In many places red flags bearing the emblems of the Soviet were flying on industrial buildings and there were signs that they might soon be flying on the public buildings. The attitude of many of the middle-class journals appeared to be that of desperation in regard to economic conditions and a willingness to accept anything for a change. According to the terms arranged between the employers and the workingmen in the metal industries, the former paid the cost of the change but they consented to this because the government ordered them to do so. In this respect the government vindicated itself in a remarkable manner from the charge so often made by the Socialists that it always took the side of the employer against the workingman on principle. The prime minister was certainly showing himself partial to the working class. A committee was appointed representing both sides equally to prepare the basis of a law organizing industries on the principle of the participation of workingmen in the technical and financial control and in the administration of the industry to which they belonged. The question arose whether the workingmen once admitted to this position of responsibility would not show a spirit so hostile to the employers that it would paralyze the industry. The trade unionist leaders promised that these reforms while satisfying the workingmen would at the same time stimulate them to work more efficiently. They made the same promise, however, in respect to the eight hour day and the results had not conformed to it. The more radical journals of the Socialist party did not conceal their belief that these measures for working class participation in industrial control were merely a step in a social revolution and they hailed it as the first surrender of the middle class and the capitalist system. And the same spirit ran through the comments in foreign Socialist papers. For example, the well-known Socialist paper in Paris, *L'Humanité*, said, "The central point of the struggle is the taking possession of the factories by the workers; it is a blow at private property."

A mixed commission formed in the autumn of representatives of the employers and the labor organizations failed to come to an agreement in respect to the control of plants and was dissolved. By the end of the year the government had gained strength and was more successful in the maintenance of order. Soldiers took the places of strikers on several occasions in November. A riot at Bologna, November 21, attributed to Socialist attempts to control the city government resulted in the killing of eight persons and the wounding of others. It was promptly followed by a measure imposing severe punishment on persons having explosives in their possession. A *modus vivendi* was arranged by the government between workingmen and employers and was in effect at the close of the year. The extreme radical element seemed to be under control and in general an approach to normal conditions was reported.

THE ITALIAN RADICALS. There was a considerable Communist element in the Italian labor

movement which threatened to turn it into a social revolution after the model of Russia, and there were many radical sympathizers with the government of Lenin. A mission was sent to Moscow from the Italian Socialists which brought back a report in September (?) along with an order from Lenin to the Italian council of the Third International to expel certain moderate leaders from the party. The report declared that while the capitalist system had been destroyed in Russia, nothing had been set up in its place that could meet the simplest needs of civilized people. The Bolshevik system was entirely unsatisfactory. It seemed well entrenched there, for although the number of Bolsheviks was small—some 600,000 out of a population of 160,000,000—they had seized all the political and social power and were doing their utmost to suppress all other parties. They were forbidding them to use propaganda or press. Lenin's order greatly offended the Italian moderate Socialists. It said that the moderate leaders were guilty of wrecking the revolutionary government in Italy just at the moment when it was beginning to ripen. On the other hand, there were still many strong supporters of the Russian Soviet government and of the Third International. One of the secretaries of the Socialist party and a deputy in the Italian parliament declared the Third International to be the highest authority, accepted by all true Socialists of the world.

SOCIALISTS AND FOREIGN POLICY. In general the effect of Socialist influence in Italian politics was precisely what might have been foreseen, that is to say a tendency toward pacification and the repression of anything that savored of imperialism. The discussion of the Treaty of Saint Germain, for example, was violently attacked as not providing for peace in the future. There was a compact group of 150 deputies who had been elected on a revolutionary programme. Their influence upon the foreign policy could not be withstood. They opposed the alliances resulting from the war and above all they wished to enter into cordial relations with the former enemy countries. Everything they said was inspired by a profound hatred of the war and its results. As to the Albanian situation they vigorously opposed the sending of troops and demanded an independent Albania. When it was decided that the Italian forces should be withdrawn from Albania, this was proclaimed as a Socialist victory. As to Poland they opposed the sending of arms and munitions which would be used against the Red army of Russia. Toward Russia they expressed good-will and they persistently commanded the renewal of diplomatic and commercial relations. After the first session of the Chamber which was elected soon after November 16, 1919 a motion to this effect was voted and since it was diversely interpreted it passed almost unanimously. At that time it was hoped that a vast quantity of grain could be procured in Southern Russia and the resumption of trade relations appealed to all parties in view of Italy's need of food. Gradually Socialist projects of pacification were brought into conformity with the aims of the Catholic party and finally the whole Chamber was won over to the policy of renewed relations with Russia. An Italian diplomatic agent was sent to Moscow, and a Soviet agent, M. Vorosky, arrived at Rome, where there was already a commercial agent from Russia. Count Sforza justified the renewal of relations on the

ground that the opposite course would give Bolshevism the sentimental advantage of an apparent martyrdom. This was not good policy. Moreover, renewed relations would enlighten the people of the world as to what was really happening in Russia, and the more everybody knew about it, the less danger there was that the Russian example would be contagious. This was claimed by the Socialist party as a triumph for their own cause. Some of their organs were proceeding from it to demand the curtailment of Italy's colonial empire. Certain publications demanded that Libya should be evacuated. One of the Socialist leaders expressed the hope that there would soon be a Balkan confederacy based on communism extending all the way from the Adriatic and the Bosphorus by means of which Italy might communicate directly with Soviet Russia. Certain members of the party again insisted that the only way of settling the Adriatic question was by trading with a Jugo-Slavia that had turned communist.

RELATIONS WITH JUGO-SLAVIA. The Fiume situation continued to disturb Italian relations with their former allies down to the month of December. Throughout the greater part of the year D'Annunzio continued to hold the city in defiance of his own government and his country's allies. Inability to settle this matter was one of the causes of the downfall of the Nitti ministry in May. It was reappointed for a short time but gave way to the Giolitti government in June. The course of events included the setting up of the regency of Quarnero under D'Annunzio and the promulgation of a peculiar constitution; the discussion on the subject between Italy and the Allies; the final blockade by the Italian government; the surrender of Fiume and the departure of D'Annunzio at the close of the year as narrated in the **WAR OF THE NATIONS**. In July, there were local conflicts between the Italians and the Jugo-Slavs at various points during the year on account of the friction over this and other questions. An agreement was reached with Albania in August, whereby the independence and unity of that country was recognized. At the end of November after renewing direct discussions with Jugo-Slavia, the two governments signed the treaty of Rapallo (see **WAR OF THE NATIONS**) which in the main appeared to be advantageous to Italy.

AMNESTY. On October 14 there was a proclamation of general amnesty for all political and military crimes committed before Sept. 19, 1919, including deserters and former subjects of Austria-Hungary, now residing in Italy. It was required that deserters if they were to come within the terms of the amnesty, must appear before the proper authorities within a month, or if living abroad, within four months. See **ARCHÆOLOGY**.

IVORY COAST. A French colony forming a constituent part of the French government-general of West Africa, and situated between Liberia and the British colony of the Gold Coast. Area, about 125,000 square miles; population 1,562,023 of whom 738 were Europeans. Capital, Abidjan, so constituted in 1920, the former seat of administration having been Bingerville. The chief products are palm kernels, palm oil, cocoa, rubber and mahogany. The total foreign trade in 1919 was valued at \$10,038,970 as against \$5,586,685 in 1918. This was far in excess of any previous year. The imports amounted to \$4,542,648

and the exports to \$5,496,322. The leading imports in respect to value were: Cotton goods; metal manufactures and tobacco; and the leading exports were: Palm kernels; palm-oil; and mahogany logs. In 1919 England supplied 48.57 per cent of the imports; France, 26.69 per cent and the United States, 21.3 per cent. Of the exports France received 60 per cent and England 20 per cent. The tonnage of shipping in 1919 was as follows: Entered, 414,768; cleared, 439,931. There is a railway from Abidjan to Bouaké, 197 miles in length; an extension of it to the north was under construction. See **FRENCH WEST AFRICA**.

I. W. W. See **INDUSTRIAL WORKERS OF THE WORLD**.

JACKSON, JOHN BRINCKERHOFF. Former minister to Greece, died in Switzerland, December 20. In 1902 he was minister to Greece and subsequently to other Balkan states and to Persia and Cuba. He was born at Newark, N. J., in 1862; graduated at the United States Naval Academy in 1883, but resigned from the navy in 1886. Three years later he was admitted to the New York bar, but soon afterwards was appointed to the United States legation at Berlin, where he became secretary in 1894. He was diplomatic agent in Bulgaria in 1905, minister to Persia, 1907, to Cuba, 1909, Roumania, Serbia, and Bulgaria, 1911. He resigned in 1913. In 1914 he was made special agent of the State Department to report on the condition of prisoners of war.

JACOB, EDGAR. Bishop of St. Albans, 1903-1919, died at Winchester, March 25. He was born near Winchester, Nov. 16, 1844, and educated there and at Oxford. He was ordained deacon in 1868, served as chaplain in India and in 1878 became vicar of St. Mary's at Portsea. His success in developing the latter parish brought him into public notice and he was appointed Chaplain-in-Ordinary to Queen Victoria. In 1896, he became the second Bishop of Newcastle and in 1903 was appointed bishop of St. Albans.

JACQUERIE, See **MUSIC, Opera**.

JALOUX, EDMOND. See **FRENCH LITERATURE**.

JAMAICA. A British crown colony comprising the island of Jamaica, which is the largest of the British West Indies, and the following dependencies: The Turks and Caicos Islands, Cayman Islands, Morant Cays, Pedro Cays. Area, of Jamaica, 4207 square miles; of dependencies, 224 square miles. Population estimated, Dec. 31, 1918, 891,040. Capital, Kingston, with a population (1911) of 57,369. Public elementary schools in 1918-19 numbered 696 with an attendance of 60,248. Acreage under cultivation in 1918-19, 1,048,240 distributed as follows: Under tillage 298,411; pasture 749,813; sugar cane, 41,067; coffee, 196,545; bananas, 60,585; coconuts, 39,783; cocoa 16,978; ground provisions 83,549; guinea grass 150,087; mixed cultivation 33,450; commons 599,726. The exports in the calendar year 1919 were valued at \$27,385,389 and the imports at \$24,749,147. This was an increase of 109 per cent over 1918 for the exports, an increase of 50 per cent for the imports, and indicated the greatest revival in Jamaican trade for a century. During the preceding forty years the United States while losing its place in the export trade was a steady gainer in the import trade, its share increasing from 31.5 per cent in 1879 to 66.1 per cent in 1919.

During the same period England's share fell from 50.9 per cent to 10.9 per cent. Total tonnage in 1919, 1,046,953. Expenditures, £228,608; revenue, £157,304. Railway mileage, 197¼. Governor at the beginning of 1920, Sir Leslie Probyn. **JAMESTOWN, N. Y.** See **MUNICIPAL OWNERSHIP.**

JAN MAYEN. See **POLAR RESEARCH.**

JAPAN. An empire in the Far East. Capital, Tokyo.

AREA AND POPULATION. Exclusive of claims pending as result of the war, the empire consists of Japan proper, Korea (Chosen), Formosa (Taiwan), Karafuto, Kwantung, the Pescadores, and many other groups of islands, the total number composing the empire being placed at nearly 4000. Total area 260,738 square miles; total population, Dec. 31, 1918, 78,261,856, of whom 57,784,935 were in Japan proper which consists of four large and many smaller islands with an area of 148,756 square miles. Population of the three largest cities, Dec. 31, 1918: Tokyo, 2,244,796; Osaka, 1,460,218; Kyoto, 539,153. For further details as to area and distribution of population, see preceding **YEAR BOOKS.**

Japanese emigration was on the wane during the war, owing to prosperous industrial conditions at home, but with the arrival of business depression emigration to South America—particularly Brazil and Peru—gradually revived. During November, 1920, the *Nippon Yusen Kaisha* booked 480 emigrant passengers to Brazil, and the *Toyo Kisen Kaisha* 200 emigrant passengers to Peru. According to the latest returns available at the close of the year there were 35,000 Japanese men and women in Brazil and 14,000 in Peru.

PRODUCTION. Three-quarters of the land is reported to be under peasant proprietors and the remainder under tenants. The taxed land owned by private persons and local corporations was officially reported, Jan. 1, 1919, at 15,183,812 cho (1 cho = 2.4507 acres) of which 5,173,703 were under cultivation; 8,024,518 forests; 1,317,819 plains; and 44,839 pastures. The following table for principal crops in 1917 and 1918 is taken from the *Statesman's Year Book* for 1920:

Crop	Acreage		Produce (Quarters)	
	1917	1918	1917	1918
Rice	7,554,807	7,554,807	34,099,600	34,187,000
Wheat	1,392,219	1,392,000	4,241,757	4,053,420
Barley	1,314,979	1,372,090	5,730,522	5,200,800
Rye	1,572,405	1,562,269	5,123,187	5,249,180
Tobacco	69,726	65,290	888,626	840,776
Tea	118,898	121,675	752,591	762,300

¹ Produce in Cwts.

The wheat crop of 1920 was estimated at 5,890,859 koku (1 koku = 5.119 bushels) or a decrease of 469,941 koku compared with the crop of 1919, though an increase of 63,537 koku above the normal crop. The crop of barley was reported at 8,289,859 koku, a decrease of 1,544,077 koku compared with the previous year and of 1,377,603 koku compared with normal. The crop of naked barley totaled 8,297,090 koku, an increase of 675,893 koku over 1919 and of 334,461 koku compared with the normal crop. Rye was given at 40,536,433 bushels. The forecast of rice production for 1920 was 310,744,680 bushels, an increase of 10 per cent over the average of the past seven years. In Chosen the cotton crop promised to be abundant, an increase of 10 per cent over last year being predicted. Millet, rice, and other

cereals indicated better results than in normal years. See **AGRICULTURE.**

The mineral and metal products in 1918 were valued at 621,413,403 yen, the chief products in the order of value being coal, steel, copper, pig iron, and petroleum.

COMMERCE. The accompanying table gives imports and exports by groups and principal articles for 1919 and 1920, in yen (the present exchange value of the yen being \$0.485).

IMPORTS			
	1919	1920	
I.A. Food, drink, and tobacco, natural state..	254,655,000	129,079,000	
Rice	162,220,000	18,085,000	
Beans and peas....	35,303,000	47,648,000	
Others	57,132,000	63,346,000	
I.B. Food, drink, and tobacco, partly or wholly prepared	96,668,000	93,325,000	
Sugar	58,182,000	60,220,000	
Salt	19,008,000	16,411,000	
Others	19,398,000	16,694,000	
II. Raw materials.....	1,093,754,000	1,260,106,000	
Oil yielding material	21,232,000	16,581,000	
Hides and skins....	15,460,000	19,371,000	
Crude india rubber and gutta-percha..	17,365,000	13,417,000	
Chili saltpeter.....	13,838,000	24,740,000	
Sulphate of ammonium, crude	27,435,000	19,872,000	
Oil cake.....	135,187,000	150,909,000	
Cotton, raw.....	667,867,000	721,433,000	
Flax, hemp, jute, etc.	16,784,000	15,326,000	
Wool	61,305,000	121,625,000	
Coal	18,588,000	19,913,000	
Ores	20,903,000	15,957,000	
Wood	10,888,000	23,469,000	
Wheat bran.....	7,436,000	9,791,000	
Others	59,466,000	87,702,000	
III. Manufactures for further use in manufacture	451,386,000	509,067,000	
Leathers	5,483,000	8,404,000	
Paraffin wax.....	6,921,000	7,551,000	
Caustic soda and soda ash.....	14,520,000	11,622,000	
Coal-tar dyes.....	10,722,000	15,439,000	
Wild Silk.....	12,937,000	8,413,000	
Pulp for paper mak'g	10,685,000	13,185,000	
Iron, pig, ingot, and slab	57,944,000	42,011,000	
Iron, bar, rod, plate, and sheet.....	156,718,000	201,152,000	
Iron, pipes, and tubes	13,219,000	15,093,000	
Lead, ingot, and slabs	10,896,000	7,109,000	
Tin, ingot, and slab.	6,952,000	7,441,000	
Construction materials	24,376,000	23,025,000	
Others	120,013,000	148,622,000	
IV. Articles wholly manufactured	261,160,000	328,364,000	
Oil, petroleum.....	21,673,000	21,270,000	
Cotton tissues.....	9,710,000	17,359,000	
Woollen tissues.....	12,605,000	31,782,000	
Papers	18,431,000	17,591,000	
Iron nails.....	5,126,000	6,701,000	
Railway carriages and parts	6,784,000	7,121,000	
Automobiles and parts	11,283,000	10,471,000	
Steam vessels.....	469,000	260,000	
Machinery and parts	89,409,000	110,921,000	
Others	85,670,000	104,888,000	
V. Miscellaneous	15,837,000	16,198,000	
Total imports, merchandise ..	2,173,460,000	2,336,139,000	
Specie and bullion.....	327,477,000	404,735,000	

	Imports	
	1919	1920
Gold	825,771,000	855,692,000
Silver	1,706,000	49,043,000
Excess of imports of Merchandise	74,589,000	387,750,000
Excess of imports of gold and silver	322,423,000	400,837,000
Foreign trade of Chosen (Korea):		
Imports of merch'dise	95,869,000	95,843,000
Net imports of specie and bullion	20,000	5,349,000
Foreign trade of Taiwan (Formosa):		
Imports of merch'dise	64,133,000	60,254,000
Net imports of specie and bullion		625,000
EXPORTS		
	1919	1920
I-A. Food, drink, and tobacco, natural state..	65,814,000	44,992,000
Rice	4,485,000	6,051,000
Beans and peas	31,975,000	10,818,000
Aquatic products	18,718,000	19,280,000
Others	10,136,000	8,843,000
I-B. Food, drink, and tobacco, partly or wholly prepared	84,546,000	97,289,000
Starches	12,745,000	4,997,000
Tea	18,408,000	17,110,000
Sugar, refined	21,625,000	30,596,000
Beer	7,200,000	4,590,000
Comestibles in tins and bottles	9,182,000	7,945,000
Others	15,391,000	32,051,000
II. Raw materials	110,270,000	140,105,000
Waste silk and floss silk	27,509,000	27,541,000
Coal	37,735,000	45,200,000
Wood	24,068,000	29,059,000
Others	20,958,000	38,305,000
III. Manufactures for further use in manufacture	905,131,000	678,571,000
Vegetable fatty oils	13,088,000	10,614,000
Camphor	7,884,000	4,965,000
Raw Silk	628,617,000	883,576,000
Cotton yarns	114,282,000	163,013,000

	Exports	
	1919	1920
Iron	21,240,000	14,742,000
Copper	26,151,000	12,689,000
Plaits for hat mak'g	20,128,000	21,961,000
Others	78,796,000	77,011,000
IV. Articles wholly manufactured	901,423,000	962,928,000
Leather manufactures	6,588,000	3,133,000
Soaps	4,373,000	4,563,000
Matches	32,969,000	28,453,000
Silk tissues	162,477,000	158,426,000
Cotton tissues	280,373,000	334,975,000
Woolen tissues	11,214,000	7,615,000
Silk handkerchiefs	7,608,000	8,685,000
Cotton towels	3,788,000	4,831,000
Knitted goods	39,068,000	36,101,000
Hats, caps, & bonnets	8,579,000	6,814,000
Buttons	10,286,000	9,979,000
Papers	25,401,000	23,128,000
Cement, Portland	6,546,000	10,059,000
Potteries	22,630,000	31,456,000
Glass and glass manufactures	19,689,000	23,239,000
Insulated elect'c wire	8,410,000	8,043,000
Iron manufactures	25,225,000	21,254,000
Gum tires	7,114,000	8,017,000
Machinery and parts	16,961,000	17,153,000
Umbrellas	4,383,000	3,547,000
Brushes	10,300,000	8,998,000
Lamps and parts	6,853,000	8,514,000
Toys	13,001,000	21,186,000
Others	167,644,000	174,759,000
V. Miscellaneous	32,187,000	24,504,000
Total exports—merchandise	2,098,871,000	1,948,389,000
Specie and bullion	5,054,000	3,898,000
Gold	1,486,000	10,000
Silver	3,568,000	3,888,000
Foreign trade of Chosen (Korea):		
Exports of merch'dise	19,817,000	22,578,000
Foreign trade of Taiwan (Formosa):		
Exports of merch'dise	35,622,000	35,180,000

The accompanying table shows the trade by countries:

Country	Exports 1920		Imports 1920	
	Yen	Increase (+) or decrease (—) compared with 1919 Yen	Yen	Increase (+) or decrease (—) compared with 1919 Yen
Asia:				
China	410,268,000	— 36,781,000	218,088,000	—104,013,000
Kwangtung Territory	113,697,000	— 36,430,000	196,862,000	+ 34,468,000
Hongkong	74,055,000	+ 14,899,000	2,234,000	+ 697,000
British India	192,250,000	+ 75,371,000	394,930,000	+ 75,452,000
Straits Settlements	35,780,000	+ 5,886,000	17,137,000	+ 11,073,000
Dutch East Indies	107,225,000	+ 49,870,000	68,628,000	+ 3,101,000
French Indo-China	3,445,000	+ 1,908,000	20,619,000	—103,506,000
Asiatic Russia	22,881,000	— 48,077,000	3,832,000	— 1,093,000
Philippines	34,378,000	+ 15,822,000	16,405,000	+ 875,000
Siam	4,201,000	+ 806,000	3,245,000	— 26,692,000
Other countries	243,000	+ 94,000	566,000	— 45,000
Total	998,373,000	+ 43,368,000	942,546,000	—131,859,000
Europe:				
England	97,797,000	— 13,656,000	232,216,000	+104,674,000
France	71,654,000	+ 4,809,000	14,482,000	+ 5,651,000
Germany	1,603,000	+ 999,000	15,115,000	+ 14,856,000
Belgium	4,811,000	+ 880,000	3,964,000	+ 3,915,000
Italy	6,377,000	— 21,000	2,117,000	+ 1,886,000
Switzerland	136,000	— 272,000	9,197,000	+ 553,000
Holland	7,900,000	+ 6,421,000	6,281,000	+ 3,114,000
Sweden	415,000	— 819,000	17,383,000	+ 6,098,000
Other countries	5,937,000	+ 1,756,000	4,563,000	+ 2,101,000
Total	195,590,000	+ 597,000	305,318,000	+142,348,000

North America:				
United States	565,019,000	— 263,079,000	878,177,000	+ 106,796,000
Canada	21,659,000	— 3,180,000	5,051,000	— 1,075,000
Other countries	6,471,000	+ 2,314,000	805,000	— 648,000
Total	593,149,000	— 263,945,000	878,533,000	+ 105,073,000
South America:				
Peru	8,722,000	+ 983,000	489,000	— 374,000
Chili	2,222,000	— 1,668,000	24,678,000	+ 10,855,000
Argentina	23,687,000	+ 12,322,000	3,929,000	+ 1,530,000
Brazil	4,220,000	+ 2,714,000	1,886,000	+ 1,240,000
Other countries	5,159,000	+ 3,228,000	1,183,000	+ 681,000
Total	39,010,000	+ 18,179,000	32,115,000	+ 13,932,000
Africa:				
Egypt	30,636,000	+ 14,724,000	13,263,000	— 2,241,000
Cape of Good Hope Colony	8,208,000	+ 10,000	73,895,000	+ 36,731,000
Other countries	895,000	+ 191,000	1,288,000	— 122,000
Total	39,707,000	+ 14,925,000	88,446,000	+ 33,868,000
All others:				
Australia	58,112,000	+ 27,286,000	62,460,000	+ 5,830,000
New Zealand	9,668,000	+ 4,392,000	23,000	— 59,000
Hawaii	13,262,000	+ 4,649,000	263,000	— 22,000
Other countries	1,527,000	+ 101,000	12,046,000	+ 2,634,000
Total	82,564,000	+ 36,428,000	74,792,000	+ 8,383,000
In warehouse .....	.....	.....	12,000,000	— 8,658,000
Unascertained	1,000	— 31,000	2,425,000	— 402,000
Grand total	1,948,894,000	— 150,479,000	2,336,175,000	+ 162,715,000

COMMERCIAL CRISIS. During the war Japanese foreign commerce and domestic industry grew enormously and there was a period of great extravagance and profiteering. After the armistice, when it was evident that the inflated values must collapse, there was a temporary depression, but the country recovered as soon as it was realized that the European markets would be sufficient for all that Japan produced. During the first six months of 1920 the excess of imports was nearly as great as the whole export trade in the year before the war. A considerable part of this consisted of raw materials and machinery, but conditions were uncertain because very high prices were paid for goods and there was a tendency to invest capital recklessly, and, moreover, there had been an enormous increase in wages. In 1919, there had been a heavy increase in wages, and in certain skilled trades wages even exceeded the British level before the war, although labor had not half the efficiency of the British. Cost of production in Japan in certain industries had become higher than that in the United States. The American demand for raw silk had in recent years been an important factor in Japanese prosperity. Between 1913 and 1919 exportation of raw silk to the United States increased four-fold in value and doubled in quantity. In the first six months of 1920, it fell off greatly in quantity but not proportionately in value. Cotton manufacture and shipbuilding showed considerable decline early in the year and shipbuilding was threatened by American competition and the decline in freights. The Chinese boycott on cotton did not have the disastrous effects described but the industry had suffered much from profiteering. The keeping up of excessive prices had caused a falling off of the exports to China. The crisis was impending early in 1920 and prices suddenly fell off after the Bank of Japan's refusal to lend money to private banks and began to call in its loans. In two months the price of cotton yarn fell off 50 per cent. The mills were more or less at the mercy of the brokers. In short, the commercial conditions in mid-summer were serious

and many Japanese orders in foreign countries were cancelled. The situation was thus described in United States official commercial reports at the close of the year: After September 1 the rate of exchange dropped gradually from \$0.50750, as the natural result of an accumulating adverse trade balance. In reality this was not such a reduction as circumstances might warrant, since the yen still remained at an appreciable premium in spite of the fact that the trade balance between Japan and the United States for the first nine months of 1920 was adverse to Japan in the amount of \$37,056,279. The rapid fall in silver quotations greatly reduced the buying power in China, where large quantities of Japanese textiles are consumed. There was a consequent diminution in demand with a subsequent slump in price. Tightness of money was in evidence on almost every hand, there being scarcely a single line of business where the supply of capital was sufficient for all requirements. This applied not only to the manufacturer but to the farmer as well, who suffered seriously through the slump in rice prices. The bankers, on the other hand, were practicing extreme caution at the close of the year, and unsecured loans to individuals had been reduced to the minimum. The financial situation seemed at that time to be growing worse. The least rumor of insecurity of a bank was cause for the withdrawal of accounts. Within two weeks there were runs on the Agricultural and Industrial Savings Bank (one of the best-known of the Tokyo savings banks) and on the Tokyo Savings Bank. The first-named bank was forced to close its doors November 18, while the latter paid out more than 8,000,000 yen on December 6. Minor failures were occurring almost daily. Many of these failures were due to speculation in the early part of the year, a condition which, owing to the tightness of money had ceased to exist at the year's close. The total amount of deposits with the associated banks of Japan on October 31 was 4,667,000,000 yen, an increase of 34,000,000 yen over the previous month. In savings accounts

the Governmental Postal Savings Bank reported a deposit of 834,792,407 yen on October 31, representing a consistent monthly increase since January 1, 1920, when deposits were 707,775,714 yen. The total of savings deposits with all other banks was roughly estimated at 150,000,000 yen.

Credit at the close of the year was so difficult to procure that loans were being secured on the mortgage of immovable properties. Evidences of this tightness of money for local credit purposes were the large amount of corporation debentures held by the banks, the government's new issues, and the comparatively high rates of interest paid. Although the policy of banking institutions was to discourage all loans and credits, local investment capital was nevertheless quite sufficient to meet demands. The Japanese Treasury had invested in foreign securities approximately 400,000,000 yen, of which 34,000,000 yen were invested in October. Besides its savings deposits, the nation's gold holdings on November 30 were 2,089,000,000 yen. The Mitsu Bank reported that promotion capitalization for October was 367,825,000 yen, an increase of 84,878,500 yen over the preceding months and a decrease of 194,540,000 yen over the same month of 1919. For the extension of old concerns, 65,435,000 was set aside in October. This was a decrease of 109,354,000 yen over the previous month and a decrease of 55,123,000 yen over the same month of 1919. Imports remained steady while exports showed rather appreciable declines. The trade balance reported for November, 1920, was unfavorable to Japan by 2,965,000 yen and for the year by 369,586,000 yen.

The large decrease in exports was due to depression of the silk trade. In normal times exports of raw silk in the latter part of the year more than compensate for an unfavorable balance of the first term. During 1920 the normal trade was reversed, so that both raw silk and silk tissues showed a decrease, the latter to the extent of 60 per cent. Cotton goods, the second export, likewise registered a decline. Of all exports, only rice and Portland cement registered gains, each of which was slight. In comparison with November, 1919, there were heavy declines in beans, tea, refined sugar, raw silk, silk tissues, matches, cotton knit goods, paper, and porcelain.

RAILWAYS. The Japanese railways are government owned and operated under the terms of the railway nationalization law passed in March, 1906. This act provided for government ownership of all except local lines and for the purchase of the seventeen main private railways by 1915, but within a few months this purchase period was reduced to one year. These railways aggregated 2824 miles. The nationalization of the Japanese railways was not at all revolutionary but a return to original policy as the first railways in Japan were built by the state and it was not until 1881, when 115 miles of line had been constructed and were under operation, that through difficulties in securing capital the government decided to grant concessions to private companies for the construction of railways. This led to extensive construction and by 1891 the private companies had built 1165 miles, while the state system amounted to about 557 miles. The private companies had been assisted by government guarantees of interest, and cash subsidies, however, had been granted to the private companies and naturally were of great assistance. The industrial growth and economic progress of Japan

was such that it was realized in 1891 that a network of 3600 miles was necessary to complete a railway system adequately serving the whole country, but the existing mileage was only about 1600 miles. Much of the proposed construction did not appeal to private capital and this condition, combined with financial failure of some of the private companies, led to the initiation of a movement in favor of government ownership of the entire system. However, construction was continued under dual control, so that at the beginning of 1906 the government had 1536 miles and the private companies 3248 miles. Consolidation of the lines was proposed at various times, but thirty-eight different private companies existed in 1906 and their 3248 miles of railway were made up largely of short and disconnected lines. Some of the more important through routes, therefore, were made up of parts of the government lines and parts of different private lines.

In 1917 after the nationalization and reorganization had been effected Japan had 5857 miles of state railways with 9029 miles of track, while the private local lines brought the railway total to 7621 miles. This total was equivalent to 13.80 miles per 100,000 inhabitants and 5.16 per 100 square miles of area. All main lines were of 3½-ft. gauge and the heaviest rails weighed 70 lbs. per yd. The equipment included 2725 locomotives (12 electric), 6867 passenger cars (125 electric and 22 steam motor cars), and 196,419 freight cars. During the European war the unity of management under a single authority had not only a thorough test but operation was continued under conditions where the railways might have experienced serious embarrassment, if not utter collapse, owing to the phenomenal flood of traffic forced upon them.

The organization of the Imperial Government Railways is directed by a minister of railways, a vice-minister and an engineer-in-chief. There are in this administration the six departments of finance, engineering, mechanical engineering, traffic, private railways and business affairs. The operating organization is on the divisional system. The financial programme, covering the period up to 1923, provided for annual expenditures of from \$5,000,000 to \$12,000,000,000 for construction and from \$2,500,000 to \$18,000,000 for improvements. These figures are based on a 50 cent value in the rate of exchange for the "yen."

Many engineering improvements had been effected and were in progress while more were contemplated with a return to normal conditions. Owing to the mountainous character of the country grades of 1 to 3 per cent are frequent, with heavy curvature, heavy earthwork and numerous tunnels and bridges. And these figured especially when new extensions were contemplated. New stations, city terminals, freight yards, car ferries, shops and extensive signal equipment were likewise included in the development of the railway system from 1906 to 1918, and similar works continued. Electrification was also taken up and was installed at several points for suburban and main line traffic. A notable instance was the rack-rail section of the Usui Pass, with grades of 6.7 per cent, where steam operation in the numerous long and badly ventilated tunnels was a serious trial to enginemen and passengers. Grade reduction and double tracking were being carried on, the grade reduction works of heavy character in progress being one to eliminate

a mountain crossing with grades of 1.4 to 2.30 per cent and provide a low-level line with grades of 0.3 to 0.7 per cent. This work involved a 5-mile tunnel. The other work involved substituting a tunnel line with 1 per cent grades for an open-pass line with grades of 2.5 per cent.

SHIPPING. The appended table giving the number and tonnage of vessels entering and clearing from Japanese ports during 1919 shows that, although the number of vessels in 1919 was greater than in either 1918 or the pre-war year, 1913, the tonnage exceeded only that of the previous year. American vessels arriving in Japan during 1918 were 136 steamships of 383,171 tons and 5 sailing ships of 4044 tons; in 1919 there were 356 steamships of 1,206,506 tons and 4 sailing ships of 3945 tons. The shipping movement in 1913, 1918, and 1919 was as follows:

	Class of vessels	1913		1918		1919	
		Number	Tons	Number	Tons	Number	Tons
Entered:							
Steam		9,888	24,658,874	9,881	17,771,848	12,485	22,743,173
Sail		354	61,451	494	71,824	524	80,303
Total		10,242	24,720,415	10,375	17,843,672	12,959	22,823,476
Cleared:							
Steam		9,926	2,832,333	10,091	18,211,147	12,469	23,038,227
Sail		373	64,965	545	80,910	535	82,074
Total		10,299	24,897,298	10,636	18,292,057	13,004	23,120,301

The number of Japanese steamers as of August 31, 1920, is reported by the Department of Communications as follows: Less than 1000 tons, 2173, of 259,327 registered tons; 1000 tons to 5000 tons, 551, of 812,860 tons; over 5000 tons, 181, of 793,134 tons. The total gross tonnage is given as 2,981,815.

FINANCE. The following figures for recent budgets and for the budget estimates of the year ending March 31, 1920, was supplied by the *Statesman's Year Book* for 1920:

	1918-19 ¹	1919-20 ¹	1920-21 ¹
Revenue	Yen 902,373,475	Yen 1,064,190,340	Yen 1,275,000,000
Expenditure	902,373,475	1,064,190,340	1,275,000,000
Revenue 1919-20			
Ordinary:	Yen		
Land tax	73,809,522		
Income tax	131,045,695		
Business tax	33,745,606		
Liquor tax	109,837,963		
Sugar excise	31,113,538		
Tax on textile fabrics	21,894,646		
Customs duties	59,393,747		
Other taxes	42,461,274		
Total taxes	492,801,991		
Stamps	51,953,446		
Public undertakings and State property	260,025,915		
Posts and telegraphs	126,866,992		
Forests	16,532,286		
Monopolies	72,807,741		
Total ordinary (incl. other receipts)	839,140,948		
Extraordinary revenue	225,049,397		
Total revenue	1,064,190,340		
¹ Estimates.			
Expenditure 1919-20			
Ordinary:	Yen		
Civil list	4,500,000		
Foreign affairs	6,568,076		
Home affairs	19,277,445		
Finance	177,792,996		
Army	97,043,475		
Navy	60,886,986		
Justice	16,482,380		
Instruction	21,748,619		
Agriculture and commerce	9,084,270		
Communications	92,552,493		
Total ordinary	505,936,892		
Extraordinary expenditure	558,253,648		
Total expenditure	1,064,190,340		

The government budget proposed for 1921-22 totaled 1,562,000,000 yen. Of this 738,281,000 yen were for the army and navy, leaving only 823,719,000 yen for the other seven departments of the government, of which the department of education was to receive 268,000,000 yen.

Early in the summer Mr. Thomas W. Lamont went to Japan as the representative of Amer-

ican financial interests in order to secure the acceptance by Japan of the so-called consortium. This was an agreement on the part of England and France and the United States for the investment of money in China in order to effect internal improvements, especially in respect to railways, currency and industrial development. Japan consented to participate along with these three great Powers. The reasons for her doing so were given as follows: The desire to stabilize conditions in China by placing Chinese finances on a firm basis; the belief that Japan, owing to her situation, would profit more than any other Power from a stable and friendly China; Japan's desire to retain her place among the great Powers; the importance of remaining on cordial terms with the other members of the consortium, especially with the United States. At this time

Japan was making every effort to relieve the crisis in banking and industrial affairs resulting from abnormal war conditions (see above).

DEFENSE. The army consisted in 1920 of 76 infantry and 27 cavalry regiments, 150 field batteries, 9 mountain batteries, 19 battalions of garrison artillery, 19 battalions of engineers, and companies of railway and telegraph operators, and train troops, and one aviation battalion. Japanese official figures for war and peace strength were not published. Japanese forces

abroad at the beginning of 1920 included the division maintained on the island of Formosa, the garrisons in Sakhalien and Tsushima, and the forces in Korea and Manchuria, the last-named being placed at 30,000 men or less. In Siberia, the number was estimated in the spring of 1920 at about 50,000. According to the United States War Department the total military force of Japan,

December 31, numbered 1,645,000, of whom 273,000 constituted the permanent army.

The following list of vessels completed at the end of 1920 was supplied by the *Statesman's Year Book* for 1920:

Dreadnoughts	9
Pre-Dreadnoughts	18
Armoured cruisers.....	12
Light cruisers.....	13
Torpedo gunboats, scouts, etc.....	4
Destroyers	100
Torpedo boats.....	26
Submarines	43

See NAVAL PROGRESS.

The budget for 1921-22 provided about \$371,500,000 for the army and navy, that is to say, \$249,000,000 (498,000,000 yen) for the navy and \$122,500,000 (245,000,000 yen) for the army. The army estimates in the United States for the same year were nearly four times as much and the navy estimates were over twice as much.

GOVERNMENT. Executive power is in the Emperor who acts through a cabinet of ministers responsible to and appointed by him, and legislative power is in the Emperor and the Imperial diet which consists of two houses, namely, the house of peers and the house of representatives. Emperor Yoshihito (Harunomiya), born Aug. 31, 1869, succeeded to the throne July 30, 1912. The ministry in 1920 was constituted as follows: Prime Minister and Justice, M. Hara; Foreign Affairs, Count Uchida; Finance, Viscount Takahashi; Interior, M. Tokonami; War, Lieutenant-General, M. Tanaka; Education, M. Nakahashi; Agriculture and Commerce, Baron Yamamoto; Communications, M. Noda; Justice, Count Ohki; and Railways, M. H. Motoda.

JAPAN AND THE UNITED STATES. There was much ill-feeling between the two countries in the latter half of the year, arising especially from the vote in California in favor of restricting the purchase and ownership of land by the Japanese, (See CALIFORNIA). In September and October there was much excitement in Japan over this matter, and the general tone was hostile to the United States. Meanwhile, the two governments were trying to reach an understanding and a discussion was going on between the Japanese ambassador and the American Secretary of State. At a meeting of the Japanese cabinets, September 21, the energetic carrying on of these negotiations was approved and it was decided to bring up the question of race equality before the League of Nations. The government expressed its confidence that a satisfactory adjustment would be made, but the opposition party declared the situation to be extremely serious, and indicated dissatisfaction with the government's course. In September, a number of violent speeches and articles on the subject stirred up popular feeling against this country. The former Japanese prime minister, Marquis Okuma, declared that if the California question was not settled, Japan would have similar difficulties on her hands in Austria and Canada, New Zealand, and elsewhere. The essential points in the Japanese grievance were not the fact that Japanese alien residents of the United States were not eligible to citizenship or the contention on the part of Japan that its citizen residents of the United States should have greater rights than those bestowed on other aliens. Japan did not question the right of the United States to pass such laws as it sees fit

concerning the admission or residence of foreigners. The treaty of 1911 gave the Japanese full rights of admission and residence, but it was conditioned upon Japan's voluntarily limiting emigration to the United States as agreed upon in 1908. The protest of the Japanese applied simply to the discrimination in respect to property rights against Japanese aliens, to whom the said rights accorded to all other aliens had been denied.

THE RACE ISSUE: GENERAL CONSIDERATIONS. One of the chief arguments against Japanese immigration into the United States is that they do not inter-marry with other peoples. Other arguments are the familiar one that in the first place their low standard of life enables them to work at wages that Americans cannot accept without degradation; that they do not assimilate American ideas; and that they insist largely on remaining thoroughly Japanese, giving their own country the benefit of their experience and their earnings abroad. The Japanese view of the matter as frequently re-stated in 1920 emphasized the following points: As to inter-marriage it is argued that there has never been a chance to put the question to a test. As a matter of fact the marriages between the Japanese and the whites have been extremely rare, but everything has stood in the way of it. Owing to the legal and economic conditions of the situation, the Japanese have been herded together and, moreover, owing to race prejudice the marriage of whites with Japanese has led to the ostracism of the former. Then the Japanese immigrants have not been of the financial or social class that would readily admit of such marriages. Other races in the same condition have shown the same inability to intermingle even when they were not divided by any color line. The Portuguese in Hawaii, for example, have formed "little Portugals" and have not married with other races any more freely than have the Japanese. Conditions then, have been so unfavorable to racial inter-marriage that nothing can be definitely established for or against it and the question is one for the future to determine. Japanese writers pointed out that when marriages have occurred between whites and Japanese they have succeeded better in the case of marriages between Japanese and French and Germans, than between them and Anglo-Saxons on account of the different standard of the women on the European continent in the matter of personal liberty. The main consideration in the United States has been the danger of economic competition. Here the Japanese pointed out that the danger has been greatly exaggerated in that their immigrants have done the kind of work that the American laborer would not perform and that at present the danger scarcely exists. Formerly Japanese laborers worked at a wage that would have meant starvation for an American, but of late years and especially as a result of the war, the low standard of living on the part of Japanese laborers had largely disappeared. As to the view commonly held that Japan must, on account of the overcrowding, send her overflow to America, it was said on behalf of Japan that she does not desire large emigration to distant countries. Although Japan is densely populated and although the ratio of density is even more serious than appears from the figures, because much of the country is mountainous and therefore without economic value; nevertheless the change of Japan to an industrial

country might provide for this surplus, and Japan's national ideal being the concentration of her man power, she would desire to keep the outflow down to a minimum. The government therefore did not favor emigration to distant countries like the United States, Canada, and Australia, but rather a settlement of Japanese in Manchuria and Korea. As to the capacity of Japanese for American citizenship, the Japanese prime minister, M. Hara, expressed himself as follows, in an interview in 1920: "Despite the view of superficial observers that the Japanese cling to their habits and ideals, and insist upon Japanese language schools and publication of Japanese newspapers, they are in fact very proud of being Americanized. The Japanese in general regard the Americanization of the Japanese who were born in America as an entirely rational proceeding, and although a few extreme nationalists in Japan oppose it, the prejudice against it has almost disappeared."

One feature of the difficulty was the tendency in foreign countries to regard a war between Japan and the United States as probable, and in France especially, as inevitable. It was frequently predicted in the foreign press that a war would soon break out between the two countries. A French deputy, for example, summed up the opinions on this subject and the reasons for the belief in the approach of a Japanese-American war, in a long paper of which a brief outline is here presented, because it fairly illustrated a common point of view. The storm had long been gathering and the only reason why it had not already broken was the wish on the part of each nation to carry its military preparation to the highest degree of perfection. The conflict would certainly break out in the near future. In the United States there was not generally a strong anti-Japanese feeling, but in Japan on the other hand there was great exasperation against everything American. This hatred of the United States went back to the Peace Conference when the recognition of the principle of race equality was opposed by the United States. This was so much resented in Japan that upon the return of their representatives hardly any honor was bestowed upon them, in spite of their having obtained some real success. The exasperation was carried to a further point by the restrictions placed upon the Japanese who had settled in California and the present Californian bill would greatly aggravate the situation, since it forbade their purchasing or possessing or leasing any part of the soil of California or establishing any enterprise except in a provisional way. In the commercial rivalry in China and Manchuria, which latterly had taken a serious turn on account of conditions in Korea and Siberia where the Japanese nationalists believed that the United States had worked against them, the United States and Japan were rivals on many points and the anti-Japanese feeling in the far west of the United States was certain to cause an answering hatred in Japan. Japan could not rely upon the military aid of England in case of war, but England certainly would not lament an event which would ruin the merchant marine of the United States and at the same time damage the Japanese navy, since both of these things would tend to her supremacy. Moreover, economic necessity would drive the two nations to hostilities. In the United States, there was need of outlet for her industry, but Japan

stood in the way. In Japan on the other hand there was a bitter race antagonism and an equal necessity of an outlet for her trade. In the circumstances, it was impossible to foresee any way of insuring the peace.

In reply to those who in the United States as well as in foreign countries constantly insisted on the ultimate necessity of war Professor John Denely who for the past two years had been in China studying conditions in the Far East offered the following considerations:

"War deliberately entered into by Japan against the United States is unthinkable, as unthinkable as between the United States and Colombia. This extreme statement is made advisedly. Individuals in Japan commit hari-kari, but not the nation, and every intelligent person in Japan knows that for Japan an aggressive war with America would be national suicide. They did not know it before the last war; but then the demonstration was more than Euclidean in its rigor. When one thinks of how the United States was taxed in the last war, in spite of its railways, its financial resources and its raw materials, the idea of Japan, with its few narrow gauge railways, few forests, few mines, relatively few factories and shortage of food supply, waging a successful war with any first class industrial Power is simply silly.

"At present, having spent her war gains in enterprises in China which are not yet remunerative, and in Siberia—where they will never be remunerative until Kolchak comes to life and successfully resurrects the Omsk government—and having increased her already burdensome taxation to the stretching point, Japan is on her back financially. If she gets control of the manpower and natural resources of the continent, the case will be different. But, short of that time, which, of course, is artificially hastened by encouraging Japan to exploit Asia for her own benefit, any war between Japan and America will be the result of a series of accidents due to drifting and not to the deliberate choice of the rulers of Japan. There is at least one exception to every "never." The exception in this case is that militarists threatened with downfall at home might try to restore their prestige and power by the last desperate gamble of war."

ECONOMIC DIFFICULTIES. The series of strikes which began in December continued during the winter months, including strikes in the government steel mills and on the street car lines of Tokyo. There was a financial depression at the end of April after a period of great speculation and stocks on the Tokyo exchange underwent an enormous decline. Among other aggravating circumstances were the difficulty of securing loans, the disappearance of gold, and the unfavorable balance of trade, which was due largely to the Chinese boycott. During the first three months of 1920 the excess of imports over exports was \$130,000,000, which was equal to about 50 per cent of the total exports. Conditions grew worse and toward the close of the year the nation was facing a crisis. See above *Commercial Crisis*.

THE SUFFRAGE QUESTION. The willingness professed by the government to extend the suffrage was noted in the preceding YEAR BOOK. Measures to that end were prepared at the beginning of the year. There were three of these measures each supported by a group in parliament and when their discussion began February 14 the

government opposed them all on the ground that the time for action had not yet come. Thereupon there were scenes of great disorder in the house and people from the outside tried to break in. Manifestations in favor of extending the suffrage followed in the streets of the cities and in Tokyo attacks were made on persons and on houses. Finally, February 26, when the bills were up for final consideration the prime minister declared that it was doubtful whether the majority of the people desired universal suffrage, and he announced the dissolution of the Diet by imperial decree. Enemies of the government attributed this action to fear of defeat for other reasons, especially on the policy pursued in Siberia and criticisms of its failure to reduce prices, and of its policies in respect to national defense, taxation, and foreign affairs. Elections were held in May with the result that the government party, the Seiyu-Kai, won 265 seats while the three opposition groups won respectively 199, 29 and 39. After the elections there was still much agitation on the question of suffrage.

KOREAN POLICY. The severity of the Japanese continued and so did the resistance of the Koreans. Serious riots broke out at Gensan, where students destroyed a number of Japanese business houses and where twenty-five persons were killed. This was followed by a vigorous search on the part of Japanese troops and armed civilians throughout the country for suspected persons. It was decided at a cabinet meeting on October 9 to reinforce the troops along the Korean frontier on the Chinese side.

SIBERIA. The prime minister, Hara, declared, September 22 that the government had decided to withdraw Japanese troops from Siberia, except where their presence was absolutely necessary for the defense of the Empire. They had by that time evacuated the Ussuri Valley and the city of Khabarovsk and they were soon to leave Nikolaevsk. The regions formerly occupied by the Japanese were to come under the authority of the government of Vladivostok.

FOREIGN POLICY. The foreign policy of Japan is described in the article **WAR OF THE NATIONS**. The main point in it concerned relations with China, with the United States, and with the Russian government. In respect to its Russian policy there was wide divergence of view in Japan itself, where a strong element criticized the government for its course in Siberia. As noted under **WAR OF THE NATIONS** Japan had assumed control of Eastern Siberia, ostensibly for the purpose of counteracting Bolshevism. In the summer, the massacre of the Japanese garrison at Nikolaevsk further exasperated popular sentiment and a mass meeting at Tokyo made a demonstration against the government calling for the resignation of the prime minister, Hara.

JAYNE, HENRY LA BARRE. Lawyer, died, May 10. He was born at Philadelphia, Pa., Nov. 3, 1857; graduated at the University of Pennsylvania in 1879; and was admitted to the Philadelphia bar in 1881. During the next few years he pursued political and legal studies in Germany. He then returned to Philadelphia where he entered into partnership with Arthur Biddle, the firm subsequently becoming Biddle, Paul, and Jayne. He interested himself in politics, particularly on the side of reform. He was president of the American Society for the Extension of University Teaching and was prominent in va-

rious philanthropic, scientific, military, and legal societies.

JAYNES, ALLEN BROWN. Lawyer and politician, died, November 7. He was born in Delaware, Ohio, Dec. 4, 1879; and graduated at the Ohio State University in 1900. He went soon afterwards to Tucson, Arizona, where he became secretary of the Chamber of Commerce and published successively the *Tucson Post* and the *Tucson Citizen*. He was admitted to the bar in 1912. From 1916 to 1920 he was a member of the Republican National Committee.

JENNINGS, WILLIAM SHERMAN. Former governor, died, February 28. He was born at Centralia, Ill., Mar. 24, 1863; studied law in Chicago and was admitted to the Florida bar in 1886. He was elected county judge in 1888 and was a member of the Florida House of Representatives, 1893-5, being speaker in 1895. In 1898 he became chairman of the Democratic State Convention. From 1901 to 1905 he was governor of Florida. He was prominent in the project for the draining of the Everglades. He drew up the drainage law and the plan for the drainage and was special counsel in respect to the contract for the investigation and survey of the Everglades.

JETTE, Sir LOUIS AMABLE. French Canadian jurist, died in May, 1920. After 1909 he was chief justice of the Court of King's Bench, in Quebec. He was born in the province of Quebec, Jan. 15, 1836 and called to the bar in 1857. In the course of his career he practiced journalism; was elected to the House of Commons in 1872; was professor of Civil Law at Laval University, and dean of the law faculty at Montreal. From 1898 to 1908 he was Lieutenant-Governor of the province of Quebec. In 1903 he was one of the members of the Alaskan Boundary Tribunal.

JEWES. POPULATION. An attempt was made by the Jewish Bureau of Social Research in 1920 to estimate the Jewish population of the various countries as affected by the war and the resultant changes. The figures brought out the fact that while before 1918 nearly half of the Jews in the world were under the dominion of the Czars of Russia the partition of the Russian-Jewish community in the new states of Poland, Ukraine, Czechoslovakia, Lithuania, Hungary, and Rumania, and the distribution of the Jews in other countries left the Jewish population of the United States practically the largest of all the single Jewish communities in the world. The estimate of the total population of the Jews of the world was 15,744,662, of whom 11,435,968 were in Europe and 3,379,668 in North America. The following table shows Jewish population and per cent of total population by countries:

NUMBER OF JEWS AND PER CENT. OF TOTAL POPULATION BY COUNTRIES

Countries	Year	Jewish population	Per ct. of total
North America			
Canada	1911	75,681	1.05
Cuba	1916	2,000	.07
Jamaica	1917	1,487	.17
Mexico	1912	500	.003
United States	1918	3,300,000	3.2
South America			
Argentine Republic.....	1917	110,000	1.22
Brazil	1917	4,000	.02
Dutch Guiana (Surinam)....	1916	882	.97
Curacao	1917	600	2.00
Peru	1917	300	...

Uruguay	1917	300	.02
Venezuela	1917	475	.01
Europe			
Austria	1920	200,000	3.29
Belgium	1910	15,000	.2
Bulgaria	1919	45,000	1.0
Czecho-Slovakia	1910	349,000	2.48
Cyprus, Gibraltar, Malta	1911	1,445	.27
Denmark	1911	5,164	.2
Finland	1919	2,000	.06
France	1919	150,000	.38
Germany	1919	500,000	.88
Greece	1919	120,000	1.80
Hungary	1919	450,000	2.9
Italy	1919	43,000	.11
Luxemburg	1910	1,270	.45
Netherlands	1910	106,309	1.79
Norway	1910	1,045	.04
Poland	1919	4,100,000	13.22
Portugal	1919	1,000	.02
Roumania	1919	1,000,000	5.77
Russia in Europe:			
Soviet Russia	1919	200,000	.21
Estonia	1919	7,500	.06
Latvia	1919	150,000	5.9
Lithuania	1919	250,000	12.5
Ukraine	1919	3,300,000	11.0
Serb-Croat-Slovene State (Jugo-Slavia)	1919	100,000	.85
Spain	1919	4,000	.02
Sweden	1910	3,912	.07
Switzerland	1910	19,023	.51
Turkey in Europe	1919	75,000	6.0
United Kingdom	1918	275,000	.59
Asia			
Aden	1911	3,747	8.12
Afghanistan and Turkestan	1916	18,316	.31
Dutch East Indies (Java, Madura, etc.)	1912	10,842	.02
Hong Kong and Straits Settlements	1911	685	.04
India	1911	20,980	.006
Palestine	1916	85,000	12.00
Persia	1913	40,000	4.02
Russia in Asia	1913	76,262	.74
Turkey in Asia (other than Palestine)	1913	177,500	.86
Africa			
Abyssinia	1914	25,000	...
Algeria	1914	70,271	1.2
Egypt	1907	38,635	.34
Morocco	1911	103,712	2.11
Tripoli	1911	18,880	3.6
Tunis	1914	54,664	2.9
East African Protectorate	1916	80	.002
Rhodesia	1914	1,500	.09
Union of South Africa	1911	47,000	.78
Australasia			
Australia	1911	17,287	.39
New Zealand	1916	2,128	.21

THE YEAR ABROAD. The following description of conditions in various foreign countries in 1920 was derived from the report of the American Jewish Committee:

Soviet Russia. There was little change in the condition of the Jews of Soviet Russia. The most trustworthy reports indicated that the bulk of the Jews there, while not victims of pogroms, were nevertheless in a wretched plight. Their economic situation was described as desperate. There was no place in the Bolshevik scheme of things for a middle, a mercantile class, to which the bulk of the Jews of Russia belonged. Besides this, the Soviet government was continually placing obstacles in the path of Jewish educational and spiritual effort, notably against Hebrew education, the use of the Hebrew tongue, and the Zionist movement. It was stated that while there was a comparatively small number of the younger Jews who were adapting themselves to the new order, the great mass of the Jews were longing for a way out of a life for which they were totally unfitted, their only hope lying in a gradual restoration of normal economic life under a stable democratic government recognized by the other civilized governments of the world.

Lithuania. The Jews of Lithuania would have been in a position of comparative ease and comfort, but for the recent war between Russia and Poland, and the difficulties resulting from the capture of Vilna by a Polish army which at the close of the year were the subject of consideration by the League of Nations Council. See **WAR OF THE NATIONS**. The Jews cooperated cordially with other elements in the struggle for the independence of Lithuania, and though it was not unnatural that in this as in other parts of the former Russian empire traces of anti-Semitism should survive, it was authoritatively stated by the representatives of the Jews, that the general population cherished nothing but good-will towards the Jews. A ministry was established for the purpose of looking after Jewish educational and cultural interests. The economic situation of the Jews was considerably altered by the war. While a considerable part of them were formerly engaged in mercantile pursuits, a large number followed industrial and professional callings. The war with the attendant uprooting of many Jews from their homes, greatly altered the situation and threw most of the Jews into mercantile lines. Active measures were being taken to restore industry and to assist professional men to reestablish themselves.

The Ukraine. There were insistent reports of the continuation of anarchy in the Ukraine. The Jewish community of America had tragic evidence in the murder of the two martyrs, Israel Friedlaender and Bernard Cantor, the former a member of the Joint Distribution Committee. At the close of the year there did not seem to be any indication that conditions were likely to improve in the near future, and the only hope for the restoration of order and civilized life in South-western Russia lay in the setting up of a constitutional government, amenable to the influence of the public opinion of the rest of the world.

Hungary. During the greater part of several centuries the Jews of Hungary were practically free from the discrimination from which their brethren suffered in Rumania and Russia. During the year 1920, however, conditions changed to such an extent that the Jews of Hungary were reduced to a deplorable condition. There were frequent outbreaks conducted by sections of what is termed the White Army, which resulted in the murder of many Jews, in the looting of their property, and in the perpetration of horrible indignities. They were humiliated and libeled, and the newspapers sought to make them responsible as a body for the actions of Bela Kun and his associates, with the result that conditions became intolerable and the Jews were practically driven to despair.

Rumania. The condition of Jews in Rumania has greatly improved and according to the most recent reports was considerably better than it had been since the Treaty of Berlin. This improvement came as part of the programme of a more enlightened governmental policy following closely upon the territorial enlargement of Rumania, which in 1920 had a Jewish population of about one million. Discriminatory laws and regulations were abolished in harmony with the terms of the treaty with the Allied and Associated Powers, and in this respect Rumania was rapidly taking its place beside the great liberal nations of the West.

Palestine. On April 25, 1920, the political status of Palestine was definitely settled at a

conference of the Allied Powers at San Remo, Italy. It was then announced that Great Britain would be appointed the mandatory over Palestine. Although the terms of the mandate have not at the close of the year been laid down by the League of Nations, the draft treaty with Turkey definitely stated that the mandatory "will be responsible for putting into effect the declaration originally made on November 2, 1917, by the British government and adopted by the other Allied Powers in favor of the establishment in Palestine of a national home for the Jewish people, it being clearly understood that nothing shall be done which may prejudice the civil and religious rights of existing non-Jewish communities in Palestine or the rights and political status enjoyed by Jews in any other country." There were indications that political conditions in Palestine were rapidly improving. Now that its status had been decided, there was no doubt that racial antagonisms would be soon allayed or disappear altogether and that the progress of Palestine towards the goal set by the Powers would be orderly, well-planned, and permanent. See SYRIA

Poland. Details of the present condition of the Jews of Poland indicated that it was just as pitiable as it was following the conclusion of the world war. The reports of the American and British Commissions to investigate the situation showed that there existed between the different classes of the population a mutual distrust and antagonism. In July, during the crisis in the Russo-Polish War, information received from reliable sources indicated that attempts were being made by the Polish press and anti-Jewish agitators to incite riots against the Jewish population of several large centres by seeking to identify the Jews with the Bolsheviks. The American Jewish Committee immediately transmitted this information to the American government with the prayer that it employ its good offices to prevent threatened outbreaks. The crisis passed without any concerted attacks, although sporadic disorders continued to occur. Conditions of the Jews in Poland were thoroughly gone over in correspondence and conference between the American Jewish Committee and the Polish minister at Washington with a view to mutual understanding and improvement.

The United States. In the United States Jewish organizations sought to defend themselves against charges expressed or implied in various widely circulated books, documents, and articles. They complained that a violent anti-Jewish propaganda was being carried on in this country and in England. Among the chief causes of offense was the circulation of the so-called "Protocols of the Elders of Zion" and the articles appearing in a newspaper of which Mr. Henry Ford was said to be the owner. On December 30th the American Jewish Committee made an appeal to the public on the subject, from which the following passages are extracted or summarized:

During the war a document variously called "The Protocols of the Elders of Zion," "The Protocols of the Meetings of the Zionist Men of Wisdom," "The Protocols of the Wise Men of Zion" was clandestinely circulated for the purpose of showing that the Jews along with the Freemasons had for centuries been engaged in a conspiracy to produce anarchy and revolution. It was published in England in the summer and afterwards printed in the United States where

it was extensively circulated. The London *Morning Post* published a series of articles as a commentary on the "Protocols" in which the charge of an unholy conspiracy between Jews and Freemasons is elaborated, and Bolshevism is characterized as a movement of, for, and by the Jews and is declared to be a fulfillment of the "Protocols." These articles, whose authorship was not disclosed, were afterwards published in book form under the title *The Cause of World Unrest*. During the latter half of the year were sent forth weekly in Mr. Henry Ford's organ, *The Dearborn Independent*, attacks upon the Jews, founded on the "Protocols" and on the discredited literature of Russian and German anti-Semitism. As to the authenticity and truth of these publications, the American Jewish Committee made the following assertions:

"The 'Protocols' are a base forgery. There has never been an organization of Jews known as The Elders of Zion, or The Zionist Men of Wisdom, or The Wise Men of Zion, or bearing any other similar name. There has never existed a secret or other Jewish body organized for any purpose such as that implied in the 'Protocols.' The Jewish people have never dreamed of a Jewish dictatorship, of a destruction of religion, of an interference with industrial prosperity, or of an overthrow of civilization. The Jews have never conspired with the Freemasons, or with any other body, for any purpose.

"To say that the Jews are responsible for Bolshevism is a deliberate falsehood. The originators of Bolshevism were exclusively non-Jews. While it is true that there are Jews among the Bolsheviks, notably Trotsky, they represent a small fraction of the Jews and of the followers of Bolshevism. Lenin, who belonged to the Russian aristocracy and has not a drop of Jewish blood in his veins, was the creator as he has been the motive power of the Soviets. Tchicherin, who has conducted their foreign affairs, Bucharin, Krassin and Kalinin, all non-Jews, are, with Lenin, the brains of the Communist party. The Bolshevik cabinet, known as the People's Commissars, consists of twenty members, of whom Trotsky and Sverdlov are the only Jews, and they are Jews merely by birth. Of the Central Committee of the Communist party, including Trotsky, there are four Jews out of thirteen. The so-called Extraordinary Commission, whose function it is to suppress opposition to the Bolshevik régime from within, is directed by a triumvirate consisting of a Pole and two Letts, none of whom is of Jewish origin. Although Trotsky is the head of the War Department, his General Staff is composed exclusively of non-Jews."

JOACHIM, PRINCE. Youngest son of the ex-Kaiser, committed suicide at Potsdam, July 17. He had been long a sufferer from nervous depression and shot himself while staying at the Villa Liegintz, inflicting injuries of which he died a few hours later. He was born in Berlin, Dec. 17, 1890, and entered the army in 1911. In the war he served as aid-de-camp in the firing line in September, 1914, where he was slightly wounded, and he was at the front for a short time in the Russian campaign of January, 1915. In March, 1916, he married Princess Marie Augusta of Anhalt, by whom he had one son. The princess left her husband in 1919, and previous to his death there had been talk of a divorce. He was in Munich during the Spartacist trouble in 1919.

JOCELYN, STEPHEN PERRY. Brigadier-general, died, March 8. He was born at Bennington, Vt., March 1, 1843, and enlisted in the Vermont volunteers in 1863. He entered the regular army as lieutenant in 1866 and became lieutenant-colonel, March 31, 1899. During this time he had served with distinction not only in the Civil War, but in Indian warfare in Idaho. He took part in the Spanish-American War and served in the Philippines where he commanded the forces in Samar in 1903 and was at the head of the department of the Visayas in 1904.

JOHNS, CLAUDE HERMANN WALTER. British educator and scholar, died, August 20. After 1909 he was master of St. Catherine's College, Cambridge. He was born at Banville, England, Feb. 4, 1857, and educated at Cambridge, where he graduated with honors in 1880. He was ordained to the ministry in 1887, having meanwhile taught in Tasmania, Australia. From 1895 to 1909 he was lecturer in Assyriology at Queen's College, and from 1904 to 1910 at King's College, London. Among his writings may be mentioned various works on Assyrian and Babylonian texts; *History of Assyria*; *History of Babylonia*; and a great variety of articles on Assyria and Bible Archaeology, contributed to the periodicals and dictionaries.

JOHNS HOPKINS UNIVERSITY. A non-sectarian institution of the higher learning, for men, but admitting women to some of its courses, at Baltimore, Md.; founded in 1876. There were 442 students enrolled in the summer session of 1920, 1100 in evening courses, and 1685 in the regular fall session of all other courses, including 725 in college courses for teachers allowing for duplications. The members in the faculty numbered 370. The university assets on June 30, 1920 were \$4,589,799 and the income from all sources during that year was \$1,168,814. The library contained 226,000 volumes. Fire destroyed McCoy Hall, November 27 and spread to Levering Hall. A fire in the Pathological Laboratory made it necessary to rebuild, and it was decided to replace it by a more commodious one. The General Education Board granted \$400,000 for this. Among the gifts and bequests made during the year the following may be mentioned: \$85,128.15 from W. H. Collins Vickers for the "W. H. Collins Vickers Chair in Archaeology," of which the income was to be used only; from William A. Marburg, "The William August Marburg Memorial Fund," \$40,000; for the support of the School of Hygiene and Public Health, the Rockefeller Foundation contributed \$393,994.61 to meet the expenses and cost of equipment of school; and the Jessie Gillender Bequest for investigation into the cause, prevention and cure of Epilepsy, \$110,000. In 1920 the university had received \$2,000,000 under the La Mar bequest. President, Frank J. Goodnow, Ph. D.

JOHNSTON, ROBERT MATTHEW. College professor, died, January 28. He was born in Paris, France, Apr. 11, 1867, and educated in the United States and in Europe. He graduated at Cambridge University, England, in 1899 and was admitted to the English bar; after 1908 he was professor of history at Harvard. His writings dealt with periods of Italian history, Napoleon, Malakoff, the French Revolution, etc. and among the later ones may be mentioned: *The Holy Christian Church* (1912); *Bull Run* (1913); *Arms and the Race* (1915). He was editor of the *Military Historian and Economist* and was a

historian of the American Expeditionary Forces.

JONES, ALFRED STOWELL. British sanitary engineer, died in May, 1920. He was born at Liverpool, Jan. 24, 1882, and served with distinction in the Indian Mutiny where he was severely wounded at Agra. He retired in 1872 and became the manager of the sewage works of the army corps at Aldershot until 1912. He wrote: *Will a Sewage Farm Pay?* (3 eds., 1874-87); *Natural and Artificial Sewage Treatment* (1902).

JONES, EVAN ROWLAND. British author and editor, died, January 16. He was born in Cardiganshire and coming to the United States in his youth served during the Civil War in the fifth Wisconsin infantry and on the non-commissioned staff. In 1869 he was appointed American consul at Newcastle-on-Tyne, and from 1884 to 1892 was consul at Cardiff, South Wales. He wrote volumes on Lincoln, Stanton, Grant; historical sketches; *Four Years in the Army of the Potomac*; *Heroes of Industry*, etc., besides a variety of papers on economic subjects. He was editor and proprietor of the *Shipping World*, and the *Shipping World Year Book*.

JONES, J. LEVERING. Lawyer, died at Philadelphia, Pa., November 24. For some years he had been a trustee of the University of Pennsylvania. He was born in Philadelphia, Pa., July 26, 1851; studied law at the University of Pennsylvania and practiced in Philadelphia after 1875. He was prominent in legal and civic bodies in the city of Philadelphia, where he was well known, and he was associate editor of the *Legal Gazette*.

JONES ACT. See SHIPPING.

JOPLIN, MO. See GARRAGE.

JUGO-SLAVIA. A new state formed after the war out of the component parts of the old Austro-Hungarian monarchy: consisting of old Serbia; new Serbia; Slovenia; parts of Hungary; Croatia and Slavonia; Bosnia, and Herzegovina; and Dalmatia. The estimated area and population exclusive of Fiume which was subject to disputed claims with Italy (see WAR OF THE NATIONS) were respectively, 101,254 square miles and 14,361,459. Statistics for the distribution of population, for education, etc., date mainly from before the war and will be found under the above titles and under *Austria-Hungary* in preceding YEAR BOOKS. See also the article SERBIA in the present volume. The latest figures for production were: Wheat, 24,694,726 cwts.; barley, 4,251,692 cwts.; and oats, 6,164,247 cwts. Live-stock were reported as follows: Horses, mules, and asses, 1,458,326; cattle, 5,496,531; sheep, 9,771,985; pigs, 4,849,457; and goats, 2,447,949. Forests cover nearly one-half the area. The mineral resources are considerable. Coal mines are widely distributed, the chief centres of production being the region just north of Zagreb, the region north of Serajevo, the region around Petchout, Baranya, and the northeastern section of Serbia proper. Practically all of the coal is either brown coal or lignite, none of which is suitable for the production of coke. There had been no careful survey of the coal producing possibilities of the country, but they were believed to be enormous. The production in 1919 was given at 2,494,058 tons as compared with 3,487,432 tons in 1913. In 1920 railway projects for a line from Belgrade to the Adriatic were under consideration. See NAVAL PROGRESS.

GOVERNMENT. Jugo-Slavia is a unitary kingdom under the dynasty of the former kingdom of

Serbia. Its independence was proclaimed, Oct. 30, 1918, by a National Assembly. At the end of November, 1918, a National Council assuming to represent all the Jugo-Slav provinces voted for union with Serbia and Montenegro (q.v.). The first ministry was constituted, Dec. 29, 1918, and the new state was afterwards recognized by the Allied governments. The organic law definitely constituting the new government was being worked out in 1920 and in the government then existing the executive power was vested in the king and a responsible ministry, and legislative power in the parliament, which in 1920 consisted in part of Serbian representatives whose election dated from before the war and in part of delegates from the new territories. The ruling king in 1920 was Peter I, and the ministry at the beginning of the year was constituted as follows: Prime Minister M. Vesnich; Foreign Affairs, Dr. Trumbitch; Interior, M. Davidovitch; Justice, M. Trifkovitch; Commerce, M. Yintchitch; Agriculture, M. Velisar Yankovitch; Posts and Telegraphs, M. Drinkovitch; Public Works, M. Yitisa Yovanovitch; Transport, M. Korisc; Public Instruction, M. Pribitchevitch; Food, M. Rista Yivitch; Religious Affairs, M. Marinkovitch; Forests and Mines, M. Kovatchevitch; Finance, M. Kista Stoyanovitch; Agrarian Reform, M. Kristan; Social Policy, M. Kiukovets; War, General Branko Yovanovitch; and Public Health, M. Rafailovitch.

HISTORY. Several ministerial crises took place during the year and at the end of December the cabinet was constituted as above. For leading events in foreign relations, especially with Italy, see WAR OF THE NATIONS. The plebiscite in the district of Klagenfurt resulted in favor of Austria. Fraud was charged by Jugo-Slav officials and Jugo-Slav troops were retained in the region but on the demand of the Council of Ambassadors were gradually withdrawn. The treaty of Rapallo (see WAR OF THE NATIONS) was ratified by the cabinet by unanimous vote, November 19. Elections for the constituent Assembly were held on November 28, and it met on December 12, the Croatian Peasant party and the Croatian Republicans refusing to take part. Its 416 delegates were apportioned as follows: Old Serbia, 158; Montenegro, 8; Bosnia-Herzegovina, 63; Batchka, 25; Banat, 20; Dalmatia, 11; Croatia and Slavonia, 93; Slovinia, 38. The prime minister at the close of the year declared in reply to the questions raised in the British House of Commons in respect to the status of Montenegro that in the elections of November 28 the Montenegrins had, as was their right, expressed their political preference for union. He added, "Montenegrins are Serbs, at least in the same measure as Yorkshire men are English and no one in the Kingdom of the Serbs, Croats, and Slovines thinks of subjugating them." As to the claims of the old dynasty, he referred to ex-King Nicholas as "the last tyrant in Europe that the great war swept from the world's stage." See MONTENEGRO.

JUVENILE COURTS. UNITED STATES. Juvenile Court legislation was enacted in four states during 1920. These laws may be briefly summarized as follows:

Alabama. The law creates and establishes Juvenile Courts in all counties having a population of not less than 75,000 and not more than 95,000.

Maryland. The law confers upon the other judges

of the Judicial Circuit of Maryland authority to sit in juvenile cases in Talbot County, etc.

New Jersey. Two laws were passed amending the law creating juvenile courts in counties of the first class which was passed in 1912 and amended in 1919.

Virginia. The law amends the Code of Virginia relating to contributing to the delinquency of minors.

The Children's Bureau of the United States Department of Labor published early in the year the report of a survey made in 1918 of the organization and regulation of 2034 courts in the United States hearing children's cases. (Courts in the United States hearing Children's Cases, by Evelina Belden, Government Printing Office, 1920.) This, with a study issued later in the year, of Juvenile Court Legislation in the United States, by Sophonisba P. Breckenridge and Helen R. Jeter, (Legal Series No. 5. Bureau Publication No. 70, Government Printing Office, 1920.) form the most careful and extensive statement of the conditions under which child offenders are tried, available to date.

The survey of courts hearing children's cases showed that every year 175,000 children's cases are brought into court. Of these, 50,000 are tried in courts that are not especially adapted to them. Frequently they are tried by the regular criminal process in use in the State or city, and the child is treated as a law-breaker and not, as all juvenile court jurists now consider desirable, as a dependent in need of protection. The Children's Bureau, in its survey, set as its minimum degree of specialization to be recognized as adequate, for a court having jurisdiction over children's cases separate hearings for children, official probation service, and records including some information regarding the social conditions in which the child was living. Of the courts studied, only 321, or 16 per cent, had this minimum degree of specialization, and over half of these were in five States.

Many States are not carrying out the provisions of their own laws regarding juvenile offenders. Children are detained in jails, in close contact with old and hardened offenders, in many States where the law provides for their proper separation. Routine physical and mental examinations to discover possible contributing causes of delinquency, are shown to be the exception rather than the rule, although the relation between delinquency and mental and physical defects is well established.

The summary of Juvenile Court legislation is based on data gathered prior to July 1st, 1919, but contains an appendix covering 1919 legislation. The legislation is summarized under eight main headings.

1. The court given jurisdiction, whether specially created or already existing, and the character of the jurisdiction conferred;

2. The extent of the jurisdiction, whether over children or adults or both;

3. The preliminary procedure, including the complaint, summons, investigation, care of child pending hearing;

4. The hearing, including the nature of the proceedings, the time and place, privacy, jury trials, mental and physical examinations, appeals;

5. The disposition of the case, including special care for the sick and feeble-minded, and requirement of parental support;

6. The relation of the court to coöperating agencies;

7. The organization of the court; judge, probation officers, advisory board, records and reports;

8. The construction and purpose of the law.

EUROPE. According to the United States Children's Bureau the example set by the United States in establishing juvenile courts has now been followed by all the principal countries of Europe. Spain, the last to fall in line, has now adopted the modern viewpoint that delinquent children should not be treated as criminals, but rather as victims of adverse conditions and surroundings. In working out the details of the law Spanish authorities have followed America's experience. Under the Spanish law the children's judge is not necessarily a member of the bench. He is assisted by two advisory members appointed by the Commission for the Protection of Children. Privacy is guarded very closely in the Spanish juvenile courts; no one except probation officers is allowed in the court except by special permission, and the press is forbidden to publish any information about cases of juvenile delinquents. Since Chicago established the first juvenile court in 1899 similar courts have been established in England, France, Belgium, Holland, Denmark, Switzerland, Italy, Germany, Russia, Austria, and Hungary.

KAISER WILHELMSLAND. A former German colony situated in the northern portion of southeastern New Guinea; lying between 2° 30' and 8° south latitude, and 141° and 148° east longitude. It was declared a German protectorate in 1884 and formed a part of what was known as German New Guinea. The area, including adjacent islands, is placed at 70,000 square miles. The interior is little known and the estimates of pop. vary from 110,000 to 530,000. At the outbreak of the war, it was occupied by the Australian forces, and from that time was under Australian administration.

KAMERUN, CAMEROON, or CAMEROONS. Formerly a German protectorate; situated in West Central Africa, between Nigeria (British) and French Equatorial Africa and extending north to Lake Chad and east to the Ubangi River. In 1911 a large tract of French territory (107,270 square miles) was transferred to Germany and is known as New Kamerun. During the war (1916) French and British troops occupied the territory of which the greater part was placed under French administration, the British controlling a strip on the southern border of Nigeria. The total area (not including the part ceded to Germany in 1911) is placed at 191,130 square miles; and the population at 2,540,000. The seat of government before the war was at Buša. The area of the French portion in 1920 was placed at 166,489 square miles and the British area at about 33,000 square miles.

In French Kamerun, the imports in 1918 were 13,528,967 francs and the exports, 7,857,214 francs. The chief exports were: Palm kernels and palm oil, rubber, ivory, and cocoa; and the chief imports were textiles, spirits, salt, iron-ware, colonial produce, etc. The French commissioner in 1920 was M. Garde. See *FRANCE, History*.

In British Kamerun the volume of trade was valued at \$1,465,936, as against \$1,170,565 in 1918. Imports in 1918 totaled \$626,629; in 1919, \$324,217, while exports in 1918 reached \$543,936, and \$1,141,719 in 1919. The principal exports were: Cocoa, palm kernels, and palm oil; and

the imports consisted of the usual African trade goods brought chiefly from England, but there were substantial imports from the United States and some trade with Fernando Po. The British colony was under the governor of Nigeria.

KANSAS. POPULATION. According to the preliminary report of the census, of 1920, there were 1,769,257 residents in the State, Jan. 1, 1920, as compared with 1,690,949 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 165,287, a falling off of 7.1 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produce Bu.	Value
Corn	1920	5,190,000	137,535,000	\$80,515,000
	1919	4,100,000	62,320,000	87,248,000
Oats	1920	2,241,000	68,799,000	26,832,000
	1919	1,574,000	44,229,000	32,287,000
Barley	1920	888,000	21,285,000	9,578,000
	1919	537,000	14,499,000	14,499,000
Wheat	1920	8,903,000	137,056,000	178,178,000
	1919	11,080,000	152,079,000	328,970,000
Flaxseed	1920	23,000	159,000	286,000
	1919	14,000	88,000	334,000
Clover Seed	1920	7,000	15,000	147,000
	1919	6,000	11,000	209,000
Rye	1920	124,000	1,612,000	1,612,000
	1919	200,000	2,520,000	3,553,000
Broom Corn	1920	20,000	3,800	338,000
	1919	20,000	2,900	435,000
Hay	1920	2,796,000	4,688,000	47,620,000
	1919	2,828,000	5,584,000	87,142,000
Potatoes	1920	68,000	5,780,000	8,670,000
	1919	68,000	5,168,000	9,819,000
Sorgh'm Si'p	1920	5,000	430,000	538,000
	1919	7,000	490,000	598,000

• Tons. * Gallons.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 396,195; Cox (Democrat), 185,447; Debs (Socialist), 15,510; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 314,588; Hughes (Republican), 277,658; Benson (Socialist), 24,685. The election for governor in 1920 was: Allen (Republican), 319,836; Davis (Democrat), 214,927; Stanton (Socialist), 12,544. The election for United States Senator was: Curtis (Republican), 326,991; Hodges (Democrat), 170,433; Reedy (Socialist), 13,416. Farm homes amendment 223,499 for and 201,559 against; finance and taxation amendment, 218,931 against and 170,710 for; good roads amendment, 284,689 for and 193,347 against.

POLITICS AND GOVERNMENT. The Kansas Court of Industrial Relations was organized on February 2 and its first annual report covered the period from that date to the close of the year. Twenty-eight industrial cases were filed, of which twenty-five were filed by labor, two were investigations by the court, and one was filed by capital. Twenty of the cases filed by labor were decided and in thirteen wage increases were granted. The following considerations in regard to the first year of the courts activities were advanced in the official report and the governor's comments: The number of cases filed and decided is a very poor indication of the activities of the Industrial Court. The work of the court was along various lines and in various fields. For instance, in the coal investigation, involving working conditions for from 8000 to 10,000 miners, three bench orders were issued by the court affecting working conditions, two of these admittedly favorable to the miners; the other, modifying what is known as the "check-off"

system, was not satisfactory to either the miners or mine operators, but was believed by the court to be fair to the public. The check-off system, is the name given to the rule by which the employers check off from the miners' pay the monthly dues, the special assessments and the fines imposed by the local miners' unions. One other very important matter which was given attention by the court was the investigation into the cost of producing and distributing coal from the mines of Kansas and within the State of Kansas. The court has worked under a severe handicap, which robbed it of an opportunity to rest its fate upon its own merits. It was established as a court to find solution for industrial controversies and to protect the public against the waste and danger of industrial war. It was meant to be a court of human relations, not a board of public utilities. Because of a desire to save the cost of an additional body, the Industrial Court was given the administration of the old public-utilities law. Public-utilities work had so increased that the court was robbed of the opportunity to do more than care for the acute industrial cases. As an indication of the relative time the court had at its disposal for industrial work and public-utilities work, it is only necessary to point out that there were 650 public-utilities cases as compared with the 28 industrial cases above mentioned. The American Federation of Labor at its annual convention at Montreal, June 7, sharply attacked this measure.

The adoption of the farm homes amendment noted above made possible the beginning of an important legislative programme for checking the growth of land tenantry in the State and strengthening the agricultural conditions as to farm labor and soil conservation.

By the good-roads amendment the State was authorized to extend its aid to road building. Limitation of the State's help was twenty-five per cent of the cost of the road, and this twenty-five per cent should not exceed in any county more than ten thousand dollars per mile for more than one hundred miles in any county. This practically meant that the State should not pay more than twenty-five per cent of the cost of any road built in any county.

OFFICERS. Governor, Henry J. Allen; Lieutenant-Governor, Charles S. Huffman; Secretary of State, L. J. Pettjohn; Treasurer, Walter L. Payne; Auditor, Fred W. Knapp; Attorney-General, Richard J. Hopkins; Superintendent of Public Instruction, Miss L. E. Wooster; Superintendent of Insurance, Frank L. Travis.

JUDICIARY. Supreme Court: Chief Justice, William A. Johnston; Justices, Rousseau A. Burch, Henry F. Mason, Silas W. Porter, Judson S. West, John Marshall, John S. Dawson.

KANSAS, UNIVERSITY OF. A co-educational State institution of the higher education at Lawrence, Kan., founded in 1864. The enrollment for the summer session was 925 and for the regular fall session 4500. The faculty numbered 235. Productive real estate was valued at \$250,000. The income for the year amounted to \$1,092,179. The library contained 133,000 bound volumes and 45,000 pamphlets. An important gift was the Thayer Collection of art pieces, valued at more than \$150,000. President, Dr. E. H. Lindley.

KANSAS CITY, KAN. See CITY PLANNING
KANSAS CITY, MO. See CITY PLANNING, and MUNICIPAL GOVERNMENT.

KARAFUTO. The Japanese portion of the island, Sakhalien, comprising all of the island that lies south of the fiftieth parallel of north latitude. Area, 13,048 square miles; pop., estimated in 1918 at 79,131.

KAUFMANN, MORITZ. British clergyman and writer on social economics, died, March 8. He was born Oct. 7, 1839 and educated at Trinity College, Dublin, winning prizes in ancient and modern languages and in English composition. He was engaged for many years in pastoral work in Great Britain and abroad, and after 1893 was vicar of Calthorpe, Norfolk. In 1899-1900 he lectured at the University of Dublin. His publications included various volumes on Utopias, Christian Socialism and other aspects of advanced economic thought, and among the later ones may be mentioned: *The Housing of the Working Classes of the Poor*. He contributed to the *Cambridge Modern History*, and translated and selected *Pascal's Thoughts*.

KELLOGG, DANIEL FISKE. Editor, died, October 28. He was born at Chittenango, N. Y., Mar. 19, 1865, and after graduating at Amherst college in 1886, joined the staff of the New York *Sun* of which he was city editor from 1891 to 1902 and financial editor from 1902 to 1913. He also wrote extensively on financial and social topics for many magazines and newspapers. After 1913 he was associated with J. P. Morgan and Company.

KEMPFF, LOUIS. Rear-admiral, died, July 29. He was born at Belleville, Ill., Oct. 11, 1841; appointed to the Naval Academy in 1857 and became a lieutenant in 1862. During the Civil War he took part in the battle of Port Royal in 1861 and served in the Atlantic blockade squadron in 1861-2, taking part in the capture of several Southern ports. In 1862-63 he was in the West Gulf blockading squadron and took part in the bombardment of Sewell's Point and the re-occupation of Norfolk. In 1863-4 he was in service on board the *Sonoma* and *Connecticut*. After the Civil War he served in the Pacific Squadron, 1865-70; on the training ship *Portsmouth*, 1867-68; and in the following year he was executive officer of the *Mohican* in the eclipse expedition to Siberia. His subsequent naval experience covered a wide range of duties, including those of ordnance officer at the Mare Island navy yard, inspection service, etc. He was commandant of the Mare Island navy yard, 1899-1900. In 1900-2 he was squadron commander of the Asiatic fleet and took part in the measures for the protection of the lives and property of the Americans. He was retired in October, 1903.

KENNEDY, DAISY. See MUSIC, Artists, Instrumentalists.

KENTUCKY. POPULATION. According to the preliminary report of the census of 1920, there were 2,416,030 residents in the State, Jan. 1, 1920, as compared with 2,289,905 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 270,676, an increase of 4.4 per cent, since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	3,300,000	100,650,000	\$82,533,000
	1919	3,300,000	82,500,000	127,875,000
Oats	1920	350,000	8,225,000	6,004,000
	1919	350,000	7,875,000	7,166,000
Wheat	1920	550,000	5,610,000	10,715,000
	1919	900,000	10,350,000	21,838,000

Crop	Year	Acres	Prod. Bu.	Value
Clover Seed	1920	25,000	52,000	780,000
	1919	20,000	38,000	1,129,000
Rye	1920	40,000	480,000	720,000
	1919	50,000	600,000	1,050,000
Tobacco	1920	550,000	*467,500,000	70,125,000
	1919	600,000	*498,000,000	190,236,000
Hay	1920	1,103,000	*1,508,000	33,099,000
	1919	1,125,000	*1,573,000	39,853,000
Potatoes	1920	65,000	6,435,000	9,652,000
	1919	70,000	4,900,000	10,290,000
St. Potatoes	1920	18,000	1,890,000	2,835,000
	1919	18,000	1,890,000	3,024,000
Sorg'm St'p	1920	51,000	*4,845,000	5,184,000
	1919	50,000	*4,250,000	5,270,000
Cowpeas	1920	21,000	252,000	945,000
	1919	21,000	252,000	806,000
Soy Beans	1920	8,000	120,000	420,000
	1919	7,000	105,000	420,000

* Pounds. * Tons. * Gallons.

LEGISLATION. Among the measures passed in the regular session of the legislature the following may be mentioned: Provisions in respect to the care of neglected, dependent, and delinquent children, and child labor (see *CHILD LABOR, State Legislation*); requirement of teaching in the public schools; the humane treatment of animals; creation of an athletic board of control and regulation of boxing contests; creation of a State board of charities and corrections; provision for the employment of convict labor on State highways and bridges; regulation of the construction and maintenance of dwelling-houses; creation of commission to make a survey of the educational systems of the State; excise or license tax on gasoline sold at retail; creation of a State department of State roads and highways; annual license tax on distillation of spirits; prohibition of, manufacture of, and traffic in intoxicating liquors except for specified non-beverage purposes and regulation of the non-beverage manufacture and traffic; prevention of fraud in securities offered for sale in the State; provision for the suppression of mob violence and the prevention of lynching; provision for commission form of government for cities of the fifth and sixth classes choosing to adopt it; provision for physical education and training of all pupils in the public schools; authorization of any political party that had cast at least 20 per cent of the total vote of the State in the last presidential election to prescribe its own method of nominating candidates for governor, and certain leading State officials, and United States Senator; placing the nomination of judges of the court of appeals and circuit courts within the application of the State primary law; license tax on race tracks; provision for payment of a minimum salary for teachers outside graded school districts and incorporated cities and towns maintaining separate school systems; scholarships for veterans of the late war; definition and prohibition of "criminal syndicalism" and sedition; prevention of combinations in restraint of trade; inculcation of habits of thrift and industry in the schools; provision for State tuberculosis sanitarium; regulation of vehicles and registration and licensing of motor vehicles.

ELECTIONS. The vote in the presidential election of 1920 was: Cox (Democrat), 456,497; Harding (Republican), 452,480; Debs (Socialist), 6409; Watkins (Prohibitionist), 3325; as compared with the following vote in the election of 1916: Wilson (Democrat), 269,990; Hughes (Republican), 241,854; Socialist, 4734; Prohibitionist, 3036.

OFFICERS. Governor, Edwin P. Morrow; Lieutenant-Governor, S. Thurston Ballard; Secretary

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of State, Fred A. Vaughan; Treasurer, James A. Wallace; Auditor, John J. Craig; Attorney-General, Charles I. Dawson; Superintendent of Agriculture, Labor, and Statistics, W. C. Hanna; Superintendent of Public Instruction, George Calvin; Superintendent of Insurance Rates, N. O. Gray.

JUDICIARY. Court Appeals: Chief Justice, John D. Carroll; Justices, Rollin Hurt, Gus Thomas, Ernest Clarke, F. D. Sampson, W. E. Settle, Huston Quin, William Rogers Clay.

KENTUCKY, UNIVERSITY OF. A co-educational State institution at Lexington, Ky., founded in 1858. The enrollment for the summer session was 316 and for the fall session, 1717. There were 126 members on the teaching staff. The productive funds of the institution were: College, \$515,708; Trust Fund, \$10,571; Experiment Station, \$276,684; Extension, \$203,145. President, Frank LeRond McVey, Ph.D., LL.D.

KENYA COLONY. See *EAST AFRICA PROTECTORATE*.

KENYON COLLEGE. A Protestant Episcopal institution of the higher learning at Gambier, Ohio, founded in 1825. In the fall session the enrollment was 175. Members of the faculty numbered 20. Judge U. L. Marvin, LL.D., formerly of the Ohio Circuit Bench was added to the faculty. The endowment was estimated at \$867,662. The year's income was \$81,223. There were 35,000 volumes in the library. President, William F. Pierce, L.H.D., D.D.

KEREKJARTO, DUOI. See *MUSIC, Artists, Instrumentalists*.

KIAOCHOW. A town, harbor, and district on the east coast of the Chinese province of Shantung; before the war constituting a German protectorate; after Nov. 7, 1914, administered by the Japanese whose claim was recognized in articles 156-8 of the Treaty of Versailles, which, however, was not signed by China. Area, exclusive of the bay, about 215 square miles; pop., about 192,000, but including the neutral zone which comprises a strip along the coast with an area of about 2500 square miles, the pop. was estimated at over 1,200,000. On Aug. 30, 1919, the Japanese exclusive of the military numbered 27,600. The port and chief town is Tsingtao, which in 1919 was turned into a fortified coaling station. In 1918 the imports were 62,465,460 Mexican dollars and the exports 50,602,265 dollars. The chief imports were: Cotton, silk goods, metals, cigarettes, paper, etc., and the chief exports were: Straw, braid, silk, bean oil, etc. The tonnage of steamships entered and cleared in 1918 was 1,388,339 of which 1,090,801 were Japanese.

KIMBALL, FRANCIS HATCH. See *PAINTING AND SCULPTURE*.

KINCH, EDWARD. British chemist, died, April 6. For thirty-five years he was professor of chemistry at the Royal Agricultural College at Cirencester. He was born, Aug. 19, 1848, and was educated at the Royal College of Chemistry where he was a member of the teaching staff from 1876 to 1881. He was professor of chemistry at the Imperial College of Agriculture at Tokyo, Japan. He wrote many papers for the leading chemical journals.

KINKAID, THOMAS WRIGHT. Admiral, died August 11. He was born at Cincinnati, Ohio, Feb. 27, 1860; graduated at the Naval Academy, 1880, and became assistant engineer in 1882. He served during the Spanish-American War and was

on the *Oregon*, 1900-4. He was fleet engineer of the Asiatic fleet in 1904, and thereafter was on duty at the Norfolk Navy Yard and in the inspection service. In 1910 he was appointed head of engineering at the experiment station, Annapolis, Md.; promoted rear-admiral in October, 1917.

KLINGER, MAX. German painter, etcher, and sculptor, died in 1920. He was born in 1857; distinguished himself first by a series of etchings of which "A Life" (1882); "Eve and the Future" (1880); and "Death" are among the most famous; then by about fifty decorative paintings, and a series of monumental paintings, including "Judgement of Paris" (1886); "L'Heure bleue" (1889); a "Crucifixion" (1890); and "Christ on Olympus" (1897). Meanwhile he was engaged in mural painting and, after 1894, in polychromatic sculpture, executing "Cassandra," "Amphitrite," and the statue of Beethoven among others from 1894 to 1902. Later works include a "Crouching Diana"; colossal bronze "Athlete"; a tragic bust of Nietzsche; Brahms monuments at Hamburg and Vienna. By connoisseurs he has been placed in the front rank of modern plastic arts and compared in respect to the universality of his work with the great Florentines of the Renaissance.

KNIGHT, HENRY JOSEPH CORBETT. Bishop of Gibraltar, died at Hitchin, England, November 27. He was educated at Islington and the University of Cambridge, where he graduated with honors, and was ordained priest in 1886. He was for several years Fellow and Lecturer of Corpus Christi College, Cambridge, and principal of the Clergy Training School. In 1905-6 he was Hulsean lecturer and preacher at the university in 1887, 1895, 1905, and 1913. In 1911, he was appointed Bishop of Gibraltar, being the sixth Anglican incumbent of that office.

KNITTING INDUSTRY. See **TEXTILE MANUFACTURING.**

KNUPFER, PAUL. German dramatic basso, died in Berlin, November 7. He was born in Halle, June 21, 1866. After his debut in Sondershausen he was a member of the Leipzig Opera until 1898; thereafter to the Berlin Opera. He sang frequently at Convent Garden and at Bayreuth, being especially famed as a Wagner interpreter.

KOENEN, TILLIE. See **MUSIC, Artists, Vocalists.**

KOLCHAK, ADMIRAL. Russian Anti-Bolshevik leader, executed, February 7. He was born in 1874. He was one of the many Anti-Bolshevik leaders who were reported in the Allied newspapers to be certain of success. For several months a series of victories was announced, but toward the end of 1920 it was evident that his case was hopeless and in the concluding months of that year, he was a fugitive. He was executed by the Irkutsk revolutionary committee along with his former prime minister, Pepelaiev. On his fall from power, he named as his successor, General Semenov, who, however, also failed in his endeavors, as recounted in the preceding YEAR BOOK. See also the articles **RUSSIA** and **WAR OF THE NATIONS** in the present volume.

KOPPEL-ELFELD, FRANC. See **GERMAN LITERATURE.**

KOREA or **CHOSEN.** A country in eastern Asia dependent on Japan after Mar. 2, 1906 and formally annexed by Japan by the treaty of Aug.

22, 1920. Capital, Seoul. Area, 84,103,000 square miles; pop. Dec. 31, 1918, 17,412,871. The Japanese element at the end of 1919 was given at 336,872. The interests are wholly agricultural and the chief crops are grains, beans, rice, tobacco, and cotton. The rice crop in 1918 was 68,622,018 bu. There has latterly been a prospect of successful gold mining. In 1918 the total value of mineral products was 30,828,074 yen. The foreign trade (merchandise only) at the open ports in 1918 was as follows: Imports 158,309,363 yen; exports, 154,189,148 yen. The chief imports were: Cotton goods, machinery, coal, paper, sugar, timber, kerosene, and grass cloth; and the chief exports were: Rice, beans, cattle and hides, and gold ore. The larger part of the trade was with Japan. In 1919 the length of railways was given at 102 miles. The budget estimates for 1919-20 balanced at 77,560,690 yen. The Japanese Governor-General in 1920 was Baron Saito. See **JAPAN.**

KOVABOVIC, KAREL. Bohemian dramatic composer and conductor, died in Prague, December 6. He was born there on Dec. 9, 1862. After completing his studies at the Prague Conservatory, and later under Fibich, he began his career as conductor. In 1899 he became chief conductor at the Bohemian National Theatre in Prague. In the spring of 1919 he gave in London a Czech-Slavic Music Festival, for which he brought his entire orchestra and two of the foremost choral societies. In his own country his operas are immensely popular, almost rivaling those of Smetana. He also wrote seven ballets, a concerto for piano and orchestra, and choral works.

KRONOLD, SELMA. American dramatic soprano, died in New York, October 9. She was born in 1866. In the nineties she was a well known operatic singer, having created the roles of Santuzza and Nedda in the American premieres of *Cavalleria Rusticana* (1891) and *Pagliacci* (1893). In 1900 she became a Catholic and retired from the stage. After that she devoted her entire time to the Catholic Oratorio Society, of which she was the founder.

KUBELIK, JAN. See **MUSIC, Artists, Instrumentalists.**

KURDISTAN. A region lying to the south-east of Armenia and for the most part within the limits of the former Turkish Empire, but partly also within Persia. Area, estimated at 74,000 square miles and the pop. at about 3,000,000 of whom four-fifths were Kurds. In the old Turkish Empire, the region was included in the vilayet or province of Armenia and Kurdistan.

KUSTENLAND. See **COASTLAND.**

KUYPER, ABRAHAM. Dutch statesman and theologian, died at The Hague, November 8. He was born in 1837; became pastor at Amsterdam in 1870 of one of the chief congregations of the country; entered journalism and became involved in political and religious controversy; founded the Free Reformed Church after 1880; was elected to parliament in 1874, and again in 1897; organized the fusion of Catholic and Calvinist parties and in 1901 became prime minister. His party was defeated in June, 1905. He lectured in many places in the United States and delivered a lecture course at Princeton in 1898. He edited an *Encyclopædia of Sacred Theology* (2d ed., 1908-10), translated into English. He wrote works in theology and church history, and published an important edition of the Polish reformer John A. Lasco.

KWAKIUTL. See ANTHROPOLOGY.

KWANGCHOW-WAN. A small region on the coast of the Chinese province of Kwangtung, obtained by the French from China under a 99-year lease, in 1898, and administered under the governor-general of Indo-China. Area, about 190 square miles. Population about 168,000.

KWANGTUNG or **KWANTO.** A territory in the southern part of the Liaotung peninsula, leased by Japan from China as the successor to the Russian leasehold after the Russo-Japan war. Area, 538 square miles; pop. (Dec. 31, 1918), 583,458, of whom 60,237 were Japanese, exclusive of the army and navy. Imports (1918) 83,521,131 haikwan taels; exports 91,301,399 yen. The seat of administration is at Dairen, formerly known as Dalny, an excellent harbor, free from ice all the year round, and connected by railway with Mukden, Kharbin, and the Eastern Chinese Railway System.

Kwangtung is also the name of a province of China (q.v.).

LABOR. See CHILD LABOR; COÖPERATION; INDUSTRIAL WORKERS OF THE WORLD; LABOR ARBITRATION AND CONCILIATION; LABOR LEGISLATION; OLD AGE PENSIONS; STRIKES AND LOCK-OUTS; UNEMPLOYMENT; WOMEN IN INDUSTRY; WORKMEN'S COMPENSATION; and articles on GREAT BRITAIN, and other foreign countries.

LABOR, AMERICAN FEDERATION OF. The Federation held its fortieth annual convention at Montreal, June 7. A significant feature was the increased strength of the more radical element in respect to government ownership of railways. It was a substantial victory over Mr. Gompers and his conservative supporters, carrying a resolution in favor of government ownership and democratic operation by a vote of 29,058 to 8348. Many proposals favored by the Gompers element, however, were carried. Among them may be mentioned: Refusal to urge the recognition of the Russian Soviet government; endorsement of the League of Nations; demand for the self-determination of Ireland and the removal of the military; for the release of "political and economic" prisoners; measures for organizing international unions of policemen and office-men; support of steel, coal, and policemen's strikes; condemnation of the Kansas industrial court (see KANSAS), and of anti-strike laws, and the Transportation Act; endorsement of non-partisan political campaign; support of all unions demanding a shorter working-day, the union to decide the length of the day; criticism of labor planks in the Republican platform. Other resolutions included: Condemnation of compulsory military training and military training in the schools; support of the Nolan minimum wage bill providing a minimum wage of \$3 a day for Federal employees; demand for the repeal of Lever and Espionage Acts; condemnation of "outlaw" movement in railway unions (see RAILWAYS); support of free speech, etc.; demand for severe measures against Asiatic immigration in accordance with programme of California unionists including: Cancellation of the "gentleman's agreement," absolute exclusion of Japanese and other Asiatics as immigrants, and debarment of Asiatics from American citizenship forever. Efforts to prevent the drawing of the color line continued: A resolution was passed requesting the Brotherhood of Railway Clerks to eliminate the words "white only" in defining qualifications and to admit colored people into membership with full rights.

In 1920 out of 110 national and international organizations, 100 admitted colored members.

The number of members in the Federation, Apr. 30, 1920, was 4,078,740, an increase of 109.6 per cent over the number in 1915. In the year ending Apr. 30, 1920, strike benefits amounted to \$87,913. Officers elected in 1920: President, Samuel Gompers; secretary, Frank Morrison; treasurer, Daniel J. Tobin.

LABOR ARBITRATION AND CONCILIATION. The report of the second Industrial Conference which as noted in the preceding YEAR BOOK met Dec. 1, 1919, did not issue its final report till March 1, 1920. In this the Conference arguing that prevention was better than cure urged as the best means of avoiding industrial conflict the extension of the principle of labor representation in the direction of industries by means that were already in operation in certain trades, namely, by shop committees and councils, work councils, etc. These means had been successful, it is said, in union and non-union shops, and in shops where both union and non-union labor was employed. For disputes that failed of adjustment by means of these joint organizations, the report recommended a system national in application, to consist of a National Industrial Board, local Regional Adjustment Conferences, and Boards of Inquiry.

The local Regional Industrial Conference was to consist of four representatives elected under certain specified conditions by the parties in dispute, and of a regional chairman who should be a trained government official appointed by the President. Reference of disputes to this body was to be voluntary. If the Regional Conference were unanimously agreed, there should be a collective bargain; if it were not, the question might be submitted either to the National Industrial Board or to an umpire chosen by the parties to the dispute. Pending settlement of disputes referred to the Regional Adjustment Conference, production must continue. If one or both parties refuse to submit the dispute to this body, its chairman should constitute a Regional Board of Inquiry made up of two employers and two employees in the industry and not parties to the dispute, which Board should have the right to subpoena witnesses and publish its findings for the guidance of public opinion.

The National Industrial Board should consist of nine members,—three from representatives of the employers, three from representatives of the employees, and three from representatives of general interests especially conversant with economic questions—all to be appointed by the President and Senate without regard to political affiliations; the headquarters of the Board to be at Washington. It should serve as the board of appeal in all matters of wages, hours, and working conditions that cannot be adjusted by the Regional Adjustment Conference. Its decisions must be unanimous. Further features of the plan and the comment on it were thus summarized in the *Political Science Quarterly*. Besides acting as a board of appeal in the matters above mentioned it may so act on all other questions which come before a Regional Adjustment Conference, which may be submitted to it by the parties to the dispute, and which they have not been able to agree upon in the Regional Adjustment Conference, except questions of policy such as the "closed" or "open" shop. In case it cannot reach a determination it is to make and pub

lish majority and minority reports. The plan proposed may be applied to public utilities, in which case the governmental regulatory agency is to have representatives on the Adjustment Conference. It is to make no recommendations relative to railroads, but to provide machinery for the prompt and fair adjustment of wages and working conditions of government employees. The plan involves no penalties other than those imposed by public opinion. It does not provide for compulsory arbitration, nor does it deny the right to strike. The Industrial Conference declared itself in favor of collective bargaining as the most helpful approach to industrial peace. It denied the right of government employees to strike. Moreover, it declared strongly against the policy of allowing policemen and other employees engaged in the administration of justice and the preservation of life and property to join or affiliate with organizations that use the strike as a weapon of warfare. The report of the Conference was bitterly attacked by Mr. Gompers, who claimed that in seeking to further employee representation in shop councils it was advocating a system destructive of labor unions. Shop councils and committees, he maintained, "lend themselves to the designs of employers hostile to trade-unionism and are, in fact, almost without exception creatures of employers."

GREAT BRITAIN. The Industrial Courts Act of 1919 continued for twelve months certain features of the act for the temporary regulation of wages passed in the preceding year. With the expiration of that period in October, 1920, the last trace of war-time control of industry disappeared. In the joint industrial (Whitley) councils and the Industrial Court, however, machinery for industrial adjustment was in operation. The functions and results of these two instruments were summarized in as follows in October:

"The Industrial Court was established as an independent tribunal for the adjudication of disputed claims to act, if called upon, after the disputants have failed to reach agreement. Resort to the Court is entirely optional, and cannot be imposed by one party upon the other. The Court is not designed as a substitute for the conciliation machinery which ought to exist in every properly organized industry. Most industries have already provided themselves with such machinery. Excluding cotton, coal-mining and railway transport, which have their own special ways of dealing with disputes, and engineering, which is reconsidering its arrangements, there is not one well-organized trade in the country that has not set up what are popularly called Whitley Councils. Fifty-seven joint industrial councils have been formed in as many industries, and there are four or five in Government services. All but half a dozen are functioning healthily, and with good hope of long and useful activity. Four have come to an untimely end; two are in a state of suspended animation. The best results from some points of view have been obtained by the Councils in the industries that provide public services, like the tramways, electricity, gas, and water undertakings. The municipal authorities and the workmen's representatives are working well together, and developing mutual understanding and confidence. The principal occupation of joint industrial councils up to the present has been with wages and other conditions of employment. But everything that concerns the welfare of the industry may legitimately come within the scope of their activities."

LABOR BUREAU, INTERNATIONAL. After the Washington conference in 1919 the International Labor Bureau held its first meeting in Paris, January 26-29. Representatives of 11 governments were present, six from employers and six from workers. The resolutions of the Washington conference were carried into effect.

The second meeting was held in London, March 23-25. Here the main question discussed was that of hygiene in industrial plants.

LABOR LEGISLATION. Owing partly to the limited number of regular legislative sessions in 1920, but more significantly as a result of the spirit of reaction that had grown so prevalent and temporarily blighting, the year's output of protective labor legislation, in the light of all legislative experience, is conspicuously meagre and ill-considered. Yet a few measures, especially in the field of social insurance, have been gained. The following analysis of labor legislation is compiled from *The American Labor Legislation Review* for September, 1920, for American subjects, and from the *Bulletin of the International Labour Office* of the League of Nations for foreign subjects. In addition labor legislation for specific subjects is discussed under CHILD LABOR; MINIMUM WAGE; OLD AGE PENSIONS; SOCIAL INSURANCE; WOMEN IN INDUSTRY; and WORKMEN'S COMPENSATION.

THE UNITED STATES. Two measures to be credited as outstanding gains were finally enacted into law by Congress. One establishes a system of compulsory, contributory old age and disability insurance for the government's 300,000 employees in the classified civil service. The other creates the machinery for Federal-State coöperation in the vocational rehabilitation of industrial cripples. Twenty-four States have taken action looking to such rehabilitation—18 States having, by legislative enactment or through proclamations by their respective governors, accepted the provisions of the new Federal law. This is all a part of a campaign begun two years ago for the enlightened development of workmen's compensation legislation so as to make possible not only cash payments and medical care, but also the reclamation and restoration to useful, self-sustaining occupations of the maimed victims of industrial accidents.

MISCELLANEOUS LEGISLATION. Kentucky and New York appointed child labor commissions to investigate and suggest remedies for child welfare in the state. New York also appointed a legislative committee to recodify the labor laws, as well as Maryland. Massachusetts passed a no-discrimination law for applicants for positions in the State civil service. New Jersey passed a law providing for the issuance and sale of stock to the employees of a corporation. Kansas passed a law allowing non-profitmaking corporations to promote welfare of labor and industry to be tax-free.

INDIVIDUAL BARGAINING. Congress passed laws restricting still further the paying of wages to seamen. The prohibition of advance payments to seamen or deductions from their wages was strengthened. The fine for violation of this law is from \$25 to \$100. Allotments to members of the family are no longer permitted. Demanding or receiving remuneration for procuring employment for seamen is made a misdemeanor with a maximum penalty of \$500, or imprisonment for six months. Louisiana passed a law declaring that discharged employees must be paid within 24 hours upon demand. An employer who fails to pay is liable for full wages from the date of demand until payment. Mississippi made provision for the payment of wages of a deceased person to the nearest of kin, and defined who the nearest of kin should be. Minor changes were made by Massachusetts, New Jer-

sey, Kansas, New York, and Virginia in labor laws under this head.

COLLECTIVE BARGAINING. The transportation bill (passed by Congress in February, 1920), provides for a railroad labor board to consist of three persons representing the employees, three representing the employers, and three representing the public to adjust labor disputes arising in any carrier by rail except that be a local electric railway. Virginia officially recognized labor organizations. District of Columbia police and firemen were forbidden to join any union which would countenance strikes. Kansas officially recognized the right of collective bargaining. Nebraska, New York, and South Dakota made provision for the settling of labor disputes by arbitration. Texas passed a law heavily penalizing the impeding or interfering with the operations of common carriers.

MINIMUM WAGE. The salaries of civilian employees of the United States and District of Columbia were increased by temporary bonus as last year. The salaries in New Jersey and Virginia were increased also. In Massachusetts and Nebraska provision was made for minimum wage laws to be enacted during the coming year.

HOURS OF LABOR. Ohio, Kentucky, Nebraska, and New Jersey, enacted minor restrictions on employment hours, while New York and South Carolina lifted restrictions. Virginia reduced child employment from 10 to eight hours a day. Employment between nine P. M. and seven A. M. is forbidden. Provision was made by the United States, Maryland, Massachusetts, New York, and Virginia for annual vacations to government and state employees.

EMPLOYMENT. Georgia passed a law requiring every private employment agency to procure a license from the department of commerce and give a \$500 bond. Emigrant agents, seeking employees for work outside the state must give a \$1000 bond. Employment agencies were established in Kansas, Massachusetts, and South Dakota. The appropriation for the Farm Labor and State Employment Bureau in New Jersey was raised to \$30,000. The Federal appropriation was cut from \$400,000 to \$225,000.

SAFETY AND HEALTH. Regulation of child labor was made in Maryland, Massachusetts, and Virginia. Regulation of factories, workshops, and mercantile establishments was effected in Kentucky, Nebraska, New Jersey, New York, Oregon, and Rhode Island. Safety regulation of mines was effected in Kansas, Kentucky, and Ohio. Safety regulation of transportation was effected in New York, North Dakota, and Virginia. For further social insurance, see **WORKMEN'S COMPENSATION.**

ADMINISTRATION. A woman's bureau was established in the Federal Department of Labor to investigate and report on matters pertaining to the welfare of women in industry. The bureau is also to formulate standards and policies to promote the welfare of wage-earning women, improve their working conditions, increase their efficiency and advance their opportunities for profitable employment. Appropriations were increased in a number of the states, and salaries were increased at the same time.

FOREIGN. Reports continue to come in showing that foreign countries are passing labor legislation tending toward a universal eight-hour day for all employees in industries and mercantile concerns. Countries that had previously en-

acted eight-hour day legislation have been forced to modify their decrees to cover special cases, but in no case has the total number of hours of employment in three weeks been increased. In a number of cases the number of hours of overtime within a given period has been limited. In Austria notification to the industrial authority that overtime is going to be asked of certain employees, may be given, and permission for this may or may not be given by that authority. An Act of Feb. 12, 1919, amends the Act of Dec. 19, 1918, to make special regulations in certain industries. In Czecho-Slovakia an act dated Dec. 19, 1918, provides that: "In undertakings subject to the Industrial Code or carried on as factories, the actual hours of work of workers shall, in principle, not exceed eight hours within 24 hours, or 48 hours in the week." This is made to cover even persons employed in agriculture and forestry. Also "it shall not be lawful for the employer to give out work to workers employed in his undertaking to be done at home for the purpose of lengthening the hours of work." The act also provides for a break in the work, 15 minutes every five hours, or for employees under 18 years of age, every four hours, as a minimum. Further, "The worker must be allowed in every week an uninterrupted period of rest of at least 32 hours." Eight-hour decrees were issued in Luxemburg and Poland, similar to that of Czecho-Slovakia. In Poland the decree provides that employment on Saturday shall be only six hours. The decree also states that "this decree shall not entail any reduction in the wages of workers and employees." A royal decree was issued in Spain providing for an eight-hour day and a 48-hour week. Reports come from a number of countries respecting eight-hour day agreements between employers and employees which have proved just as effective as laws. The legislatures in these countries will doubtless pass laws to the same effect during the next few years.

MISCELLANEOUS: Argentina. A number of detailed regulations covering workers who do not work in the usual factory manner were made by an act of Oct. 8, 1918. The Department of Labor was given authority to appoint wage boards in the communes for every trade in which homeworkers are employed, whenever requested in writing to do so by at least 50 workers in any branch or trade. These boards have complete authority.

Austria. In the latter part of 1918, Austria established conciliation boards for the regulation of wages and work conditions. "A document to attest his capacity as an industrial worker, shall be provided by the communal authority at the request of a worker." Regulations governing work on Sunday and at night were made.

Belgium. An act of Feb. 28, 1919, makes extensive restrictions for the employment of women and children in industry, including restrictions on night work. "Night work shall be prohibited for all women, irrespective of age," in most of the industries.

Czecho-Slovakia. In the Eight-Hour Day Act of Dec. 19, 1918, regulations are made concerning night work, allowing only males over 16 years of age to be employed at night. One section reads as follows: "Male young workers up to 16 years of age, and female workers up to 18 years of age shall only be employed on light

work which is not injurious to their health and does not check their physical development." The penalty for the violation of any provision of this act is made very severe.

France. By act of March 28, 1918, regulation of night work was made, and on April 23, 1919, the eight-hour day was introduced. It contains provision for a partial holiday on Saturdays. This act was made to apply also to Algeria and to the French colonies.

Great Britain. In July, 1918, the Workmen's Compensation Act was passed, and in August of the same year an extensive act to regulate education and child labor was passed.

Spain. A royal decree prohibiting night work in bakeries and similar establishments during six consecutive hours was issued in April, 1919.

Sweden. A Fisherman's Compensation Act was passed in June, 1918, providing insurance for the injured or his family.

Switzerland. A resolution of March 14, 1919, makes many regulations in regard to unemployment. For instance, "when it is necessary to restrict the operations of an undertaking, the employer shall arrange for a general reduction of hours for employees, or a readjustment to their duties, instead of dismissing them," and further, that, "when the customary hours in any undertaking are reduced by not more than 20 per cent, the employer shall continue to pay full salaries." Provision is made for compensation to the unemployed.

LABOR LEGISLATION, AMERICAN ASSOCIATION FOR. This is the American branch of the International Association for Labor Legislation. Mr. John B. Andrews is its secretary, with offices at 131 E. 23rd St., New York City. This organization collects data on labor legislation, conducts propaganda for the passage of desirable legislation, and issues a quarterly, *The American Labor Legislation Review*.

LABRADOR. The peninsula in British North America between the Atlantic and Hudson Bay, within the province of Quebec, except for the small strip along the northeast coast which is a dependency of Newfoundland. See *EXPLORATIONS AND NEWFOUNDLAND*.

LABUAN. A small island off the northwest coast of Borneo, under the administration of Singapore in the Straits Settlements (q.v.).

LAFAYETTE COLLEGE. An institution for the education of men at Easton, Pa., founded in 1826. There were 767 students enrolled for the fall session of 1920. The faculty numbered 58, including two additions. The endowment fund amounted to \$1,248,198. The library contained 49,098 volumes. The Kirby Professorship in Civil Rights was established. A gift of \$100,000 was received, and the endowment fund for \$1,000,000 was completed successfully. A new gymnasium is to be built for \$400,000. President, John Henry MacCracken, Ph.D., LL.D.

LAKEWOOD, OHIO. See *CITY PLANNING*

LAMBS. See *LIVE STOCK*.

LAMMASCH, HEINRICH. Former premier of Austria and international jurist, died at Salzburg, January 7. He was born in 1853; educated at the University of Vienna, where he became professor of international and criminal law. He was afterwards Conservative leader in the Austrian upper house. In 1903 he was one of the Venezuela arbitrators; in 1910 president of the board that decided the Newfoundland fisheries dispute; and in 1911, president of The Hague

Tribunal, having been Austrian representative in the first Hague Peace Conference. He had a large part in framing the Austrian penal code. In October 1918 he formed the cabinet that assumed office on the eve of the collapse of the Empire. Among his later writings may be mentioned: *Grundriss des österreichischen Strafrechts* (1899, 4th ed., 1911); *Rechtskraft internationaler Schiedsdisprüche* (1913, a Nobel Institute publication), *Schiedsgerichtbarkeit* (1914). See articles *LAMMASCH* and *WAR OF THE NATIONS IN YEAR BOOK* for 1918.

LAMPE, JOSEPH JOACHIM. Professor of theology, died, April 21. He was born in Holstein, Germany, May, 19, 1837; came to the United States in 1853; graduated at Knox College, Illinois in 1864 and studied at the Union Theological Seminary. He was ordained to the Presbyterian ministry in 1867 and after doing pastoral work in New York City was professor of Hebrew and Old Testament literature from 1896 to 1917 in the Presbyterian Theological Seminary at Omaha, Neb. After 1917 he was professor emeritus.

LANDS, PUBLIC. According to the annual report of the Commissioner of the Land Office, the total area of public and Indian lands originally entered and allowed during the fiscal year ending June 30, 1920 was 16,437,491.55 acres not including 422,984.44 acres embraced in finals not previously counted as original disposition of land. The latter area was constituted as follows: Public auction, 174,499 acres; abandoned military reservations, 6,414.91 acres; cash and private sales, individual claimants and small holding claims, 219,498.19 acres; preemption entries, 10,456.56 acres; soldiers' additional homesteads, 12,115.78 acres. The area of 16,437,491.55 acres is an increase of 4,566,310.05 acres, as compared with the area originally entered and allowed during the fiscal year 1919. Of the total area originally entered and allowed during the fiscal year, 8,103,844.81 acres were allowed under the stock-raising homestead act of Dec. 29, 1916. The area patented during the fiscal year was 11,850,401,337 acres, an increase of 1,073,399,988 acres, as compared with the fiscal year 1919. Of the above area 9,239,903.257 acres were patented under the homestead laws, an increase of 927,584.369 acres, not including as homesteads 11,666,546 acres patented as soldiers' additional entries.

The total cash receipts from the sales of public lands, including fees and commissions (\$1,587,060.79), sales of reclamation town sites (\$124,147.26), sales of lands and timber in the Oregon and California railroad grant (\$184,168.10), and sales of lands and timber in the Coos Bay wagon road grant (\$80,811.30), for the fiscal year 1920 were \$3,974,979.17. The total receipts from the sales of Indian lands were \$2,063,186.06. Other receipts aggregated \$93,611.18. The total receipts of this bureau during the fiscal year 1920 were \$6,131,776.41.

LANGELIER, CHARLES FRENCH. French Canadian jurist, died, February 2. He was born, Aug. 23, 1852, and was educated at Laval University, afterwards becoming one of its governors. He was admitted to the bar in 1875 and served as member of the Dominion parliament and as member of the Quebec legislature. After 1910 he was judge of the court of sessions, Quebec. He wrote: *Souvenirs Politiques* (2 vol., 1878-96); and *The Criminal Procedure* (1916).

LANGUAGES, MODERN. See *PHILOLOGY*.

LAOS. See FRENCH INDO-CHINA.

LATVIA. A new republic in the neighborhood of the Baltic, formerly within the old Russian Empire, and comprising the former Russian province of Courland, together with the four southern districts of Livonia and the three western districts of Vitebsk. It claimed also strips of territory in the former provinces of Grodno and Pskov and in East Prussia. Total area, about 24,000 square miles; pop., Jan. 1, 1914, over 2,500,000, of whom about 78 per cent were Letts. The interests are mainly agriculture, but the forest resources are extensive. The chief exports have been flax and timber. The flax crop available for export in 1919-20 was estimated at about 10,000 tons—less than one-third of the pre-war average. Other statistics published in 1920 dated from before the war. The free state of Latvia was proclaimed at Riga, Nov. 18, 1918, and was recognized *de facto* by Great Britain, Japan and Italy, and several of the smaller states. The constitution was in process of formation during 1920, elections to the constituent assembly having been held April 17-18 on the basis of universal suffrage for both sexes. The provisional government consisted of a state council of 102 members. Prime minister in 1920, K. Umanis.

A peace treaty was signed with Moscow August 11 and ratified by the Latvian Constituent Assembly, September 2. It provided for the return to Latvia of public property and property belonging to commercial and industrial concerns and of the means of transport; for the payment to Latvia by the Soviet government of 4,000,000 rubles in gold; and for the release of Latvia from the liabilities of the former Russian empire. At the close of the year, the boundaries of the country were still subject to final decision of the Allies or the League of Nations. Events of 1920 indicated that while the government was socialistic in tendency it continued to be steadily opposed to Bolshevism. Recognition of the *de jure* independence was still withheld during 1920 by the United States and France on the ground that Latvia had formed an integral part of the former Russian empire. At the close of the year France was considering recognition, but there was no sign of change in the policy of the United States in that respect as set forth in the note on the subject of American relations with Russia by Secretary Colby. See RUSSIA, *Baltic Provinces*; also WAR OF THE NATIONS.

LASCCELLES, Sir FRANK. British ambassador to Germany from 1895 to 1908, died in London, January 2. It was during his ambassadorship that the famous Kruger telegram was sent by the Kaiser. He was born March 23, 1841. He entered the diplomatic service in his youth and was secretary of legation at Berlin in 1867-8. He next served in Paris during the period of the siege and the Commune. In 1879 he was appointed consul-general to Bulgaria, in 1886 minister to Rumania, and in 1891 minister to Persia. In 1894-5 he was ambassador to St. Petersburg and in October, 1895 was transferred to Berlin. He interpreted the Kaiser's conduct at this time as due to natural capriciousness, rather than to any definite policy and he did not attach sufficient importance to the Kruger telegram. He was popular at the imperial court and is believed to have had considerable influence there. He was on familiar terms with the Kaiser, about whom he recounted a number of

anecdotes which exhibit him as a man of changeable and impulsive character and much given to a rather boisterous humor. In general Lascelles' record was not that of a very active and far-seeing diplomat.

LASH, ZEBULUN ATTON. Canadian lawyer and financier, died, January 24. He was born at St. Johns, Newfoundland, Sept. 29, 1846, and was educated at the University of Toronto. He was called to the bar of Ontario in 1868 and practiced law in Toronto till 1876. He was president of the Great Northwestern Telegraph company, and an officer of other important railway and financial institutions in Canada. He wrote besides various pamphlets and articles on legal subjects a volume entitled *Defense and Foreign Affairs*.

LAUCHHEIMER, CHARLES HENRY. Officer of the Marine Corps, died, January 15. He was born at Baltimore, Md., in September 1859; and graduated at the Naval academy in 1881. After 1883 he served in the United States Marine Corps and was promoted through the various grades to the rank of brigadier-general, Aug. 29, 1916. He was the author of *Forms and Procedure for Naval Courts and Boards* (1896-1902).

LAUDER, CHARLES JAMES. British artist, died, April, 1920. He was the son of James Thompson Lauder, the portrait painter, and was educated at Glasgow. He pursued his art studies in various countries of Europe and exhibited frequently in London and Glasgow. For fifteen years he lived at Richmond on the Thames and executed many scenes in that neighborhood. He published: *Picturesque London*; *Hampton Court*; and *Royal Richmond*.

LAW, EVANDER MOLVER. Confederate officer, died at Bartow, Fla., October 31. At the time of his death he was the ranking surviving officer of the Army of the Confederacy. He was born in 1836 and at the beginning of the Civil War was a professor in the King's Mountain Military Academy. He entered the war as lieutenant-colonel of the Fourth Alabama Infantry and served till the war's close, attaining the rank of major-general.

LAWN TENNIS. See TENNIS.

LEAD. The following information in regard to lead production in 1920 was supplied by the United States Geological Survey: The output of soft lead by mines of the Mississippi Valley and Eastern States was about 275,000 short tons, and that of argentiferous lead by mines of the Western States was about 236,000 tons, a total of 511,000 tons. The corresponding figures for 1919 are 237,000, 206,000, and 443,000 tons, and for 1918, 267,184, 314,470, and 581,654 tons. The total increase in 1920 was 68,000 tons, as compared with a decrease of 138,500 tons in 1919. The southeastern Missouri district made the largest production, 183,000 tons, as compared with 157,158 tons in 1919, and the Cœur d'Alene district of Idaho came next, with about 121,000 tons, as against 83,833 tons in 1919. Utah had an output of 67,000 tons, an increase from 61,915 tons in 1919. The imports of lead in ore were about 15,000 tons and in bullion about 49,000 tons, a total of 64,000 tons, as compared with 65,799 tons in 1919. Of the imports in 1920 Mexico furnished about 54,000 tons and Canada 4000 tons. The lead content of lead ore in bonded warehouses on November 30 was 16,187 tons and of base bullion 32,671 tons. Part of this may have been smelted or refined, but not shipped, and thus may be included in smelter stocks.

The production of primary domestic desilverized lead in 1920 was about 215,000 short tons, of soft lead about 189,000 tons, and of desilverized soft lead about 70,000 tons, making a total output from domestic ores of about 474,000 tons of refined lead, compared with 424,433 tons in 1919, made up of 208,751 tons of desilverized lead, 147,744 tons of soft lead, and 67,938 tons of desilverized soft lead. The output of lead smelted and refined from foreign ore and bullion was about 64,000 tons, compared with 57,787 tons in 1919. The total lead smelted or refined in the United States was thus about 538,000 tons, compared with 482,220 tons in 1919.

While the production of lead in the United States (estimated at 471,744 short tons) had decreased from 1916 when a record of 592,241 tons was made, yet in 1920 there was a slight increase in production over the previous year (454,921 short tons) and a continuation of the demand for the metal that developed early in 1919. As a result there was a continuance of the high prices at the end of 1919 into 1920, reaching a maximum of 9.37½ cents a pound in New York in March and then after some recession going up to a second high price of 9 cents in August. But in this upward trend the London market was a dominant factor and when the decline began there it was followed in the United States, but it also permitted imports from Mexico and Europe to America. Naturally as industrial conditions grew less promising in the United States the demand slackened during the autumn and there was a rapid fall in price from 8.9 cents a pound on September 8 to 4.5 cents on December 5. The lead market was interesting in 1920 as it was truly a world market though to a degree speculative. England imported from Spain as in 1919, but considerably less from Australia than in 1920 an account of a strike. It is also of interest to realize that the American paint industry in 1920 was the largest consumer of pig lead, and after this came the manufactures of storage batteries and the manufactures of lead-increased cables, these three industries probably requiring in 1920 a greater amount of lead than the domestic production of the United States. There was also a demand from manufacturers of sheet lead and pipe and also for shot, baring metals, solder, caulking metal, type metal, foil, etc. Of course considerable reclaimed lead was available commercially and it was estimated in 1920 that over 150,000 tons of secondary lead was made available for consumption. The production of lead in the United States as given in the Annual Review of the *Engineering and Mining Journal* is shown herewith:

LEAGUE OF THE NATIONS. On December 31, the League of Nations had nearly completed its first year having come into official existence January 10. Only three nations entitled to membership remained outside, namely the United States, Costa Rica and Honduras. The first meeting was held in Paris, January 16 and was presided over by M. Bourgeois, the French representative. By the provisions of the Covenant it comprised as will be remembered the following elements: (1) an Assembly, which was to consist of at most three delegates from each member of the League each delegation to have but one vote; (2) the Council consisting of the permanent representatives of the four chief Allied Powers, namely, France, Great Britain, Italy, and Japan, and provisional representatives from four other Powers, namely, Belgium, Brazil, Greece and Spain; (3) the permanent secretariat to consist of a chief secretary with an assistant-secretary and a numerous staff. The last of these elements, the secretariat, was the essential organ of administration. It was to arrange the order of business, determine the subjects to come before the Council and Assembly, correspond with members of the League, collect documents, keep the records, etc. Between January 16 and the beginning of December, the Council had met ten times and subsequent meetings were to be held every two months thereafter. Among the matters that engaged its attention were the administration of the basin of the Saar and the city of Danzig; the Belgian questions of Eupen and Malmédy; the question of mandates; and the racial minorities. More specifically it discussed the matter of the Aland Islands, the dispute between Lithuania and Poland, and the constitution of the permanent court of justice etc. In its administrative work it participated in the campaign against typhus in Poland, the repatriation of prisoners of war, the control of the white slave traffic, and the suppression of the opium trade. It organized an office of international hygiene, a permanent committee on Armaments, and a commission on communications and transit. In the financial field it organized the conference at Brussels where twenty-nine states were represented by eighty-six delegates. At the recommendation of the president of the League, M. Leon Bourgeois, it was decided to create an advisory committee divided into two parts, one for economic questions and the other for financial, under the presidency of M. Gustave Ador, President of Switzerland. Finally the most important event in the League's history was the meeting for the first time of its Assembly at Geneva on November 15. An account of the meetings, discussions, and results

PRODUCTION OF LEAD (REFINERY STATISTICS)*

	(In Tons of 2000 Lbs.)				
	1916	1917	1918	1919	1920
Domestic					
Desilverized	380,189	319,015	284,733	226,085	236,912
Antimonial	22,819	16,265	18,658	14,864	8,992
S. E. Missouri	206,105	205,861	189,207	158,182	206,836
S. W. Missouri	33,128	40,575	63,635	55,790	29,004
Totals	592,241	581,716	556,233	454,921	471,744
Foreign					
Desilverized	17,832	50,962	98,596	61,380	51,700
Antimonial	3,304	2,991	2,083	1,547	2,197
Totals	21,136	53,953	100,679	62,927	53,897
Grand Totals	613,377	635,669	656,912	517,848	525,641

* These figures include the lead derived from scrap and junk by primary smelters.

See METALLURGY.



THE BEGINNING OF THE LEAGUE OF NATIONS
Opening of the First Conference, Geneva, Switzerland

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of the meetings of the Council and of the session of the Assembly in Geneva will be found in the article **WAR OF THE NATIONS**.

LEATHER. The production of leather in the United States during 1920 was far below normal and while there was a good demand at the beginning of the year it fell away, and with the decline came lower values. The prices of hides and leather which had reached a maximum in August 1919, steadily receded with but few rallies so that by the end of 1920 values on a lower basis than ever before the war were reached. The prices of hides and calfskins fell from 50 to 75 per cent in this interval and naturally this led to a decline in the price of leather from 30 to 40 per cent, and of shoes from 20 to 30 per cent. At the end of 1920 packer hides ranged from 20 and 21 cents for spready native steers to 10 cents for branded bulls, where at the beginning of the year these hides had sold for 40 and 41 cents and 26½ cents respectively. The same ratio of decline was experienced with country hides, the prices at the beginning and end of the year being 28 to 30 cents and 13 to 14 cents for heavy steers; 25 to 26 and 8 cents for bulls; 50 and 75 to 10 to 17 cents for calfskins; 9 to 11.50 to 3.50 to 5.50 for horsehides; and 1.25 to 1.75 to 25 to 65 cents for hogskins. The 1920 monthly average per packer hides ranged from 31.65 for heavy native steers to 22.25 for branded bulls. The average for the year of the various kinds of packer hides dealt in was 27.131 as compared with 35.177 in 1919. 24.775 in 1918; 28.846 in 1917 and 23.537 in 1916.

For country hides the 1920 monthly average ranged from 24.20 for heavy steers to 14.94 for country brands and 40.98 for city calfskins. The yearly average prices were for 1920, 23.237, for 1919, 36.036; for 1918, 21.390; for 1917, 25.342; and for 1916, 21.969. The average prices of packer and country hides may be compared with earlier years (see **YEAR BOOK** for 1916) and especially with those for 1910 when they were 11.931 and 11.373 respectively.

Representative of the decline in the number of beef cattle in the United States was the condition in Kansas where the State Board of Agriculture reported the smallest number in five years. According to the assessors' returns of March 1, 1920, there were excluding dairy animals 2,132,733 cattle in Kansas, which number by the end of the year it was estimated had shrunk to approximately 1,843,000. Taking the assessors' figures as of March 1 for successive years the number of cattle in Kansas was as follows:

1916.....	2,201,000
1917.....	2,337,592
1918.....	2,329,717
1919.....	2,200,714

Leather suffered in the period of commercial upheaval and deflation for the packers were unable to sell their hides and the values of leather, shoes, harness, belting, gloves and other leather commodities fell to practically before the war prices or even lower. In 1920 there were from one and a half to two million less head of cattle slaughtered than in 1919, and likewise a decrease from 1918 of over a million. See **LIVE STOCK**. The total imports of cattle hides and calfskins in eleven months of the year 1920 amounted to 259,045,220 pounds as compared with 376,761,106 pounds for the corresponding eleven months ended November, 1919. Likewise the exports of leather and leather products de-

creased and Japan was the only foreign country where American exports gained. In the foreign business in hides and leather the difficulties and uncertainties of exchange interfered with trade.

As a result of the slump in the steer trade (see **BOOTS AND SHOES**) the tanners immediately curtailed their operations and for the greater part of the year their output was adjusted to the demand. There was no overproduction of either shoes or leather during the year and at its end stocks were not large. The foreign shipments had been only about one half of those of 1919. All in all considering the remarkable shrinkage in values due to enforced deflation the industry came through the year in fair condition and at its close was hopeful. However an uncertain note was struck towards the end of the year in connection with the proposed revision of the tariff by Congress. It was suggested that a duty should be placed on hides, which as the domestic supply was far from adequate would have been felt by the leather industries generally.

During the year the foundation of the American Leather Research Laboratories at the University of Cincinnati was determined on by the Tanners Council of the United States. These laboratories were to be in charge of G. D. McLaughlin and would carry on chemical and other research of interest and benefit to the industry.

LEGIEN, CARL RUDOLPH. German trades union leader and Socialist, died in Berlin, December 26. He was born about 1860 and had been a member of the German parliament since 1893. About 1890 he was elected chairman of the general federation of the German trades unions, which at that time numbered only about 250,000. The federation in 1920 comprised 8,250,000 classified paying members, representing some 60 trades and professions. He had been prominent in politics for many years.

LEGION, AMERICAN. Incorporated by Act of Congress, Sept. 16, 1919, and organized Nov. 8, 1919, this is a national organization of ex-soldiers of the World War. It professes to be "patriotic, non-partisan, non-political, non-military, and permitting of no distinction due to rank or place of service." Membership is open to any soldier, sailor, or marine who served between April 6, 1917, and Nov. 11, 1918, and to all women enlisted or commissioned in either branch of the service during the same period. Figures for Dec. 31, 1920, showed a marked increase over those of 1919. There were 9978 posts, as against 6561 in 1919, or an increase of 3417 posts, and a membership almost doubled. Abroad posts were formed in 10 countries where there had hitherto been no posts at all, and in those countries where there had been posts in 1919, the number was increased in 1920. Alaska jumped from four in 1919 to 14 in 1920; Canada has one; England has one; France increased from one to four in 1920; Hawaii from five to eight; Panama from one to two; Philippine Islands from one to six; and Mexico from one to two. During the year posts were formed in Argentine, one; Belgium, one; Chile, one; China, one; Guatemala, one; Japan, two; Poland, two; Samoa, one; Santo Domingo, one; Peru, one. During the year the Legion was active in pushing the program decided upon early in the year, of welfare legislation for service men and women, and aggressive Federal action against disloyalty, draft evaders, slackers, and propagandists seek-

ing to overthrow the government. Different posts were called upon to do special police work, and in some communities Vigilance Committees were formed by the posts to combat the unusual amount of crime. Over the Christmas holidays special attention was given by the Legion to the disabled soldiers in hospitals in this country. Several posts were called upon to act as arbitrators in labor disputes. Administration is conducted through a national commander, five vice-commanders, an adjutant, state departments, and post commanders. The national commander in 1920 was Franklin D'Olier of Philadelphia, Pa.

Even more rapid was the rise, during 1920, of the Women's Auxiliary. Starting with 50 units and 5000 members on Dec. 31, 1919, the Auxiliary had at the end of 1920 1695 units and a membership of approximately 200,000 women. Posts are maintained in every State in the Union. Besides these there are two posts in Alaska, three in Hawaii, two in Panama, and one in Cuba.

The Legion will push its expansion plan in 1921, and every effort was being made to obtain new members. Money was being raised to provide club-houses and meeting rooms for the various posts by means of subscriptions, theatricals, and other entertainments. A large number of posts already had club-houses, and others were in the process of construction. The official organ of the Legion is *The American Legion Weekly*, subscription to which is included in the membership fee.

LEGISLATION, AGRICULTURAL. See AGRICULTURAL LEGISLATION.

LEHIGH UNIVERSITY. A non-sectarian institution for the education of men, at Bethlehem, Pa., founded in 1866. For the fall of 1920 there were 1029 students enrolled. The teaching staff numbered 94. The enrollment in extension courses was 650. The productive funds amounted to \$3,000,000, and the income to \$487,329. An extension to the Chemistry Laboratory which was completed cost \$75,000. In addition to the general extension courses, evening schools were established in Business Administration and Naval Architecture. The library contained 148,000 volumes. President, Dr. Henry S. Drinker.

LEHMAN, SAMUEL. American composer, died in New York, August 29. He was born in 1882. For a number of years he was conductor at the Winter Garden in New York, for which he wrote much incidental music. He was chiefly known for the catchy lyrics he wrote for many of the popular stars of the vaudeville stage (*Everybody Works but Father*, etc.).

LELAND STANFORD JUNIOR UNIVERSITY. A non-sectarian, co-educational institution of the higher learning at Palo Alto, Cal., founded in 1891 as a memorial to Leland Stanford, Jr. The enrollment for the summer session was 685 and for the regular fall session, 2489. There were 320 members of the faculty.

According to the latest published figures (1918-19) the productive funds amounted to \$24,000,000 and the income to \$1,580,000. The library contained 320,000 volumes. The most important gifts for the year were: \$80,000 raised from subscriptions from alumni, students and friends for a War Service Memorial building; \$100,000 toward a new dining hall; and a very large collection of books and documents relating

to the great war including all the official records and reports of the Belgian Relief Commission. President, Ray Lyman Wilbur, M.D.

LEMAN, G. G. French general, celebrated as the governor and defender of Liège in 1914, died, October 17. He was born in 1851 and a short time before the beginning of the late war was commandant of the military school in Belgium. On the outbreak of the war he was in command of Liège, which he held heroically against the Germans thus checking their advancing for several days. This delay, which had not been foreseen by the German general staff, contributed to their subsequent failure on the Marne. He was wounded in the fight and made prisoner, Aug. 22, 1914. From that time he was interned in Germany till 1917, when he was released on account of ill-health and returned to France. After the victory he accompanied King Albert in his triumphal entry into Liège. On October 21 an impressive ceremony was held in his honor. A crowd passed before the palace where his body lay in state and the officers of the "Iron Division" stood guard. Masses of people followed the cortège to the station.

LE SUEUR, DANIEL. (Pen name of JEANNE LAPAUZE née LOISEAU). French novelist and poet, one of the best known women writers of her time, died in 1920. She was born in 1860 and in 1904 married Henry Lapauze, an art critic. She was a voluminous writer and published in her later years one or two novels annually. Her work was crowned by the French Academy and she was awarded several prizes and appointed Knight of the Legion of Honor. Her writings began with a volume of poems called *Flowers of April* (1882), and included: *Love To-day* (1888), *Mysterious Love* (1882), *Invisible Charm* (1887); *Beyond Love* (1889); *A Woman's Honor* (1901). In 1905 *Her Feminine Evolution* was written at the request of the committee on Industry and Commerce at the 1900 Paris exposition and in the same year she published *The Force of the Past*. In 1911 she published *A Soul of Twenty Years*, and in 1912, *At The Turning of The Days*. She also wrote several dramas.

LEVEY, CHARLES JOSEPH. South African soldier and civil official, died in October. He was born in Grayhamstown, Cape Colony, in 1846, and served with distinction in the Boer War. Before that he had distinguished himself in wars with the native tribes and served as magistrate on several occasions. He succeeded Lord Cecil as Imperial Commissioner of Western Transvaal in 1901, and in 1909 he was returned to parliament for the Transkeian territories.

LEYGUES, GEORGES. French statesman appointed, September 24, prime minister in succession to M. Millerand (q.v.), assuming also the portfolio of foreign affairs. He was born at Villeneuve-sur-Lot; entered political life in his youth; and was elected a deputy in 1884. From that time on he was continually reflected from his district. He was minister of state six times. In 1894, minister of public instruction in the Dupuy ministry; in 1895 minister of the interior in the Ribaud ministry; in 1898 minister of public instruction in the second Dupuy cabinet; in 1899 minister in the Waldeck-Rousseau cabinet; in 1906 minister of the colonies in the Sarrien cabinet; and during the great war a minister of the Clemenceau government at the most critical period of the conflict. In 1917 when

the government was threatened by the activities of the disloyal elements and when the success of the Allies was in doubt, he was a strong partisan of vigorous measures. He was a member of the Republican group of the Left at the time of his appointment to the Clemenceau cabinet (November 13, 1917) and president of the foreign affairs committee of the Chamber. He was in sympathy with a more radical policy than had been followed by the retiring Painlevé, and welcomed the aggressive measures of Clemenceau. As minister of marine he was an enthusiastic member and supporter of the Inter-Allied Naval Council and presided over the naval technical committees of that body which planned a formidable programme to combat the German submarine menace. He favored a policy of publicity somewhat at variance with that generally followed by the government and on May 26, he published a report showing that in the preceding month America and England had built 40,000 tons more of shipping than had been lost by the enemy's submarine campaign. He announced on June 25, 1918, that the U-Boat peril was ended. He supported Clemenceau's demand of retribution for Germany's failure to carry out the armistice terms and the terms of the Treaty and after the Scapa Flow incident he insisted that the Allies should be reimbursed ship for ship. On the retirement of Clemenceau Jan. 1, 1920, he returned to his seat on the Republican Left. Aside from politics he had a distinguished career as a lawyer and literary man, the main body of his writings consisting of papers on diverse subjects collected under the title of *School and Life*. He is well known also as a traveler and Alpine climber.

LIBERIA. An African negro republic on the western coast extending from the French Ivory Coast on the east to the British colony of Sierra Leone on the west. Area variously estimated at 35,000 to 41,000 square miles, and population, from 1,500,000 to 2,100,000, all of the African race, but including about 12,000 Americo-Liberians. Capital, Monrovia, with an estimated population, including Krutown, of about 6000. The staple product is the native coffee. No later figures for trade were available than in the preceding **YEAR BOOKS**. The President in 1920 was C. D. B. King, elected for the term, 1920-4.

LIBRARY ASSOCIATION, AMERICAN. This organization was founded in Philadelphia in 1876 with the purpose of promoting library interest in general, and in particular in bringing about needed reformation and improvements; in lessening cost and labor of administration by coöperation; in interchanging advice and by frequent meetings to promote *esprit du corps*. The 42d Annual Conference was held at Colorado Springs, Col., in June, 1920. At this conference the enlarged programme of the Association was presented and accepted. It provided for the raising of \$2,000,000 to finance the programme. The programme itself included the promotion of legislation and adequate appropriations for State, municipal, county, and school library work and work with children. It was brought out that only 40 per cent of the people of the United States have direct access to public libraries, and that only 27 per cent of the counties in the United States have within their borders any one library of 5000 volumes or more. One of the greatest opportunities for library extension is through further development in the schools. The Association plans to do extensive work

among the foreign born in this country in preparing them for citizenship. It was brought out that there are more than 6,000,000 of them in the country and that 1,500,000 were illiterate. Coöperation in the preparation of reading and study courses is also planned for the self-education of adults. The blind of the country, of whom there are 75,000, will receive attention at the hands of the Association. Along this line, the work in the hospitals, prisons, orphanages, etc., will be continued. The American library in Paris is about to become the American Library in Paris, Inc., where Europe may find the best in American thought and literature and in turn, guide America to the best in European thought and literature. General publicity work will be continued to provide information on libraries and library service by means of magazine and newspaper articles, and exhibits at State and county fairs. Due to poor salaries a large number of librarians have resigned during the last three years, and the Association is planning to conduct a recruiting campaign for this profession.

The work of the War Service Committee has been continued in our army and navy. On Oct. 31, 1919, the War Department took over the entire library establishment, books, buildings, equipment, and a considerable portion of the personnel in the army camps and posts within continental United States. The Association also turned over more than \$100,000 for use in maintaining libraries until Congress should make specific grant for this new work. Work in the merchant marine, coast guard, and lighthouses was continued during the year. The final report of the Association representative in Europe shows that the Association did valuable work among the soldiers right to the end.

The officers of the Association for 1920 were President, Alice S. Tyler, Library School, Western Reserve University, Cleveland, Ohio; first vice-president, H. H. B. Meye, Library of Congress, Washington, D. C.; second vice-president, Louise B. Krause, H. M. Bylesby & Co., Chicago; treasurer, Edward D. Tweedell, The John Crerar Library, Chicago; secretary, Carl H. Milam, 78 East Washington Street, Chicago; executive board, the president and vice-presidents, and Linda A. Eastman, Cleveland Public Library; Adam Strohm, Detroit Public Library; J. C. Dana, Newark Free Library; Edith Tobitt, Omaha Public Library; George B. Utley, Newberry Library, Chicago; and Azariah S. Root, Oberlin College Library. The *Library Journal*, *Public Libraries*, and *Special Libraries* are monthly periodicals devoted to matters concerning library economy and administration, and in addition there are many bulletins and pamphlets concerning the work of the Association. The headquarters of the Association are at 78 East Washington Street, Chicago.

LIBRARY PROGRESS. As a result of the increased reading done during the war in all branches, library progress has been marked during the last two years. Not only are more libraries being established, especially in small communities, but all of them are being used more than previously. The city or town library is coming to be looked upon as an essential to the welfare of the community. The war gave a great impetus to the reading of technical books, due to the specialized war activities of many men, and the constant changing of jobs of those who were in industry. This impetus has not slackened

since hostilities have ceased. During the war 75 per cent of the money expended for the Library War Service went to buy technical books because of the large demand for them. To-day many workmen are training themselves at home to be fit for a higher position, a position that requires a man with training. During the year an endeavor was made to buy certain technical books for certain communities because those communities contained certain industries. This specialization was found to be of great value, especially where the library was comparatively small.

Another advance among libraries during the year was the increased number of high school libraries established. An effort is being made to introduce the high school student to the joys and advantages of books. The pupils have responded enthusiastically, so that more and more high schools are taking this up. In some of them, reading rooms have been established with easy chairs where students may come after school hours.

War service still continues independently, for the most part, but it is hoped that the government will gradually take all this work over, or failing that, it will be dropped. The government has already taken over a good share of the work. It is interesting to note that one of the first things the League of Nations did was to establish a library in London.

Increased appropriations have been made in many of the States and cities for library work during the year. Georgia made its first appropriation of \$6000 this year. The salaries of the library employees have been increased in all of the big cities, ranging from 5 per cent to 20 per cent during the year, but these employees are still poorly paid.

The Fifth International Conference of Bibliography and Documentation was held under the auspices of the International Institute of Bibliography at Brussels, September 7th to 20th. France, Switzerland, Holland, Italy, Poland, Spain, Luxembourg, Czechoslovakia, and Belgium were represented. The United States was too far away to send delegates, and Great Britain held her own Annual Meeting at the same time. Enlargement plans were made, among which were the following: To establish a national central library of native authors in each country, similar to the Library of Congress in this country; to establish a national catalogue of all the books in all the libraries in a given country; to establish in different countries, different international departments according to subjects where a complete work catalogue would be available; to urge each country with a central library of native authors, to make résumés of all the books in the library to be used for reference; to organize exchanges between different countries, and also loans of books; and in general to further organization and cooperation throughout the world.

The Forty-Third Annual Meeting of the Library Association of England was held in September. Library progress in the British Isles is greatly hampered by lack of funds. This was considered very serious.

LIBYA. An Italian colony on the north coast of Africa, comprising the two provinces of Tripolitana and Cyrenaica, lying between Tunis on the west and Egypt on the east. Area, estimated at 405,800 square miles; population, Aug. 3, 1911, 523,176 natives, but later estimates placed it higher. The capital of Tripolitana is Tripoli with 73,000 inhabitants and of Cyrenaica, Benghazi with 35,000. According to a British authority, the imports in 1918 were £3,939,402 and the exports £300,309. The revenue for 1919-20 was 158,510,910 lire which balanced the expenditure. Governor of Tripolitana at the beginning of 1920, V. Menzinger; governor of Cyrenaica, G. De Martino.

LICENSING ENGINEERS. See **ENGINEERING.**

LIDDELL, ADOLPHUS GEORGE CHARLES. British official, well known for his reminiscences of prominent persons of his day, died in London, August. He was born June 29, 1846, educated at Eton and Oxford, and was admitted to the bar, but soon left the legal profession in order to serve as secretary on Royal Commissions and in other government positions. He was private secretary to the Lord Chancellor from 1909 to 1915. He is best known for his reminiscences, *Notes From the Life of an Ordinary Mortal* (1911) in which he records anecdotes and impressions of a great number of British celebrities.

LIESEGANG, ADOLF. American orchestral conductor and teacher, died in Cleveland, June 8. He was born in Germany in 1850. He came to America in 1893 as conductor at the Chicago World's Fair. Then he was conductor for the Savage Opera Company for 10 years, finally settling in Cleveland as teacher.

LIFE INSURANCE. See **INSURANCE.**

LIGHTHOUSES. The United States Lighthouse Service is the most extensive lighthouse organization in the world, being charged with the lighting and marking of all coast, lakes and navigable rivers under the jurisdiction of the United States excepting the Philippine Islands and Panama. Its responsibility covers 49,000 statute miles of coast line and river channels, and beyond the borders of the United States extends to the Virgin Islands, Porto Rico, islands in the Caribbean Sea, Alaska, the Hawaiian Islands, Guam and Samoa. The Commissioner of Lighthouses in his Annual Report for the fiscal year 1919-1920 stated that the number of aids to navigation, including lighthouses, lightships, buoys, and beacons, maintained by the United States Lighthouse Service on June 30, 1920 was 16,324, there having been an increase of 256 during the year. In Alaska 60 additional aids were established during the year, making the total there 535, of which 206 were lighted, but the great extent of the Alaska coasts was still quite inadequately marked.

[The accompanying table gives a summary of the aids to navigation under each class established and discontinued during the fiscal year, and also the net increase and the number in commission at the end of the fiscal years 1919 and 1920:

Class	Established	1920		Total, June 30— 1919	1920
		Discontinued	Increase		
Lighted aids:					
Lights (other than minor lights).....	82	14	68	1,768	1,836
Minor lights	125	136	11	3,129	3,118
Lightvessel stations.....	...	1	1	50	49
Gas buoys.....	60	32	28	554	582

Class	1920			Total, June 30—	
	Established	Discontinued	Increase	1919 ¹	1920
Float lights.....	19	12	7	162	169
Total.....	286	195	91	5,663	5,754
Unlighted aids:					
Fog signals.....	5	3	2	534	536
Submarine signals.....	1	1	² 1	49	48
Whistling buoys, unlighted.....	2	3	² 1	79	78
Bell buoys, unlighted.....	5	7	² 2	245	243
Other buoys.....	328	183	145	7,050	7,195
Day beacons.....	62	40	22	2,448	2,470
Total.....	402	237	165	10,405	10,570
Grand total.....	688	432	256	16,068	16,324

¹ Differences from statistics published in 1919 report are due to minor discrepancies in previous count.

² Decrease.

The commissioner of Lighthouses also presented in his report an interesting summary of the progress of the United States Lighthouse Service in the ten years 1910 to 1920. In this period there was a net increase of 4611 in the total number of aids to navigation, the number of gas buoys increased 2½ times and the number of lighthouses equipped with brilliant oil vapor lamps increased four times. The number of automatic gas lights ashore increased nearly seven times, effecting an important economy in the cost of attendance. Radio had been placed on more than half of the tenders and the light vessels, and telephone communication had been extended to a large number of light stations. During this period also many measures had been put into effect for the benefit of the personnel, including a retirement system for the lightkeepers and others of the field force. A large proportion of the Lighthouse Service, including 50 vessels and 1132 persons, were transferred by the President to the Navy Department during the World War, and the whole organization cooperated actively with the military services. Statistics as to increase in total number, in improved types, and in aids in Alaska in the 10 years period are given herewith:

fiscal year were range lights for the newly dredged Chester and Marcus Hook Channels in the Delaware River, a light and fog signal at Manitowoc Breakwater, Wis., a light and fog signal near Cape Charles City, Va., and a light tower at Huron Harbor, Ohio. The improvement of the lighting of Ambrose Channel, New York Harbor, by the use of modern acetylene buoys was completed during the year. Important improvement works were in progress on the St. Johns River, Fla., the Mississippi River, below New Orleans, the St. Marys River, Mich, Keweenaw Waterway, Lake Superior, Conneaut Harbor, Ohio, two light stations in Porto Rico, and two stations on the Florida Reefs.

Progress was made in the development of radio fog signals at lighthouses and the tests made give indication of success in what will doubtless be an important addition to the safeguarding of navigation through radio fog signals from lighthouses.

Congress on June 5, 1920 authorized \$5,000,000 for a building programme to replace vessels of the Lighthouse Service which have been lost or worn out in service or which will soon have to be condemned. Appropriation of funds for this purpose was urgently needed, as well as

Class	July 1, 1910	June 30, 1920	Increase in 10 years
Aids to navigation, total number.....	11,713	16,324	4,611
Gas buoys.....	225	582	357
Lighthouses equipped with oil vapor lamps.....	80	320	240
Lights changed from fixed to flashing.....	.....	.....	334
Fog signals (including submarine bells, but not buoys).....	540	584	44
Whistling and bell buoys.....	303	522	219
Alaska, total number of aids.....	160	535	375
Alaska, total number of lights.....	37	196	159

The increases given are net increases, the total number of new aids established having actually been 9366 in the 10 years. The total number of light-vessel stations had diminished from 54 in 1910 to 49 in 1920, seven vessels having been replaced by other efficient aids, at a considerable saving, and two new vessel stations established.

The number of automatic gas lights on fixed structures was increased in the period 1910 to 1920 from 98 to 663. The important resulting economy in wages and other expenses is shown by the diminution in the same period in the number of light keepers from 1530 to 1471, and in the number of stations with resident keepers from about 780 to 721. Allowing for new stations with keepers which have been established, keepers were discontinued at about 80 stations because of the introduction of automatic apparatus.

The most important new light and fog-signal stations completed and established during the

for adding reasonable vessel equipment to meet the considerable increase of the previous 10 years in the aids to navigation maintained. Congress at its 1920 session also authorized \$875,500 for establishing or completing various special works for the Lighthouse Service, including new depots, new light stations, and improvements at existing stations and depots; funds for these works are yet to be appropriated. Congress also authorized the establishment of aids to navigation on the Yukon River and its tributaries.

It required 6,002 persons to operate the light-house system at the end of the fiscal year 1920. Incidental to their regular duties, many opportunities arise for rendering aid to those in distress, because of the location of the light stations and vessels; during this year 129 instances of saving of life and property, or rendering valuable aid, were reported.

LIME. About 3,350,000 short tons of lime, valued at \$33,518,000, was produced and sold

in the United States, including Porto Rico and Hawaii, in 1920, according to an estimate of the United States Geological Survey from figures furnished by the principal producers. The quantity reported was more than that produced in any year since 1917 and was 9 per cent more than that produced in 1919. It did not, however, quite equal the average pre-war production. The value of the lime produced in 1920 was considerably more than the value in any previous year. The average value per ton in 1920 was \$10, in 1919 it was \$9.50, and in 1918, \$8.36. Of the 42 States and Territories that produced lime in 1920, 32 increased the output and only seven decreased it as compared with 1919. Three States made about the same production as in 1919.

LIND, JENNY. See *MUSIC, Festivals.*

LINTILHAC, M. See *FRENCH LITERATURE.*

LIPPINCOTT, WILLIAM HENRY. Artist, died, March 17. He was born at Philadelphia, Dec. 6, 1849, and studied at the Philadelphia Academy of Fine Arts and at Paris, where he was a pupil of Bonnat. He exhibited regularly at the Paris Salon and American art exhibitions. For three years he was a professor of painting in the National Academy of Fine Arts in New York. His work includes portrait paintings, figures, and landscapes, and among his paintings may be mentioned the "Duck's Breakfast," "Un Jour de Congé," "Pink of Old Fashion," "Helena," "Infantry in Arms," "Love's Ambush," and "Pleasant Reflections."

LIQUORS. On January 5, the United States Supreme Court upheld validity of the Volstead Prohibition Enforcement act as constitutional. Meanwhile steps had been taken in those States which had referendum provisions to submit to popular vote the question of ratifying the Eighteenth Amendment, on the ground that they were a part of the law making body and that a law was not valid till after they had voted upon the proposition. In Ohio and Washington the courts had decided that the amendment should have been referred to the people; in Oregon the court decided that this was unnecessary. In certain States also it was held that the enforcement of the amendment interfered with the police power of the States. Several States authorized the manufacture and sale of liquors having more than the one half of one per cent allowed by the Volstead Act. On January 16, as provided by law, the Eighteenth Amendment went into effect. On June 1st the Supreme Court revised the decision of the Ohio supreme court and decided unanimously that ratification of the amendment by the State legislatures was final and could not be submitted to a referendum even in States having a referendum clause. It declared void the provision in the Ohio constitution requiring a referendum or the ratification of amendments. Other cases based on various contentions were decided by the Supreme Court, June 7, and in every respect the validity of the Eighteenth Amendment and the Enforcement Act was sustained. The court held that the words "concurrent power" in the amendment did not imply the reservation to the States of rights equal to those of the Federal government; that the amendment applied to liquors manufactured before as well after its adoption; that State laws authorizing light wines and beers were invalid;

and that Congress had the authority to define "intoxicating liquors."

During the last six months of the year the newspapers abounded in details of liquor raids by agents of enforcement and reported seizures aggregating many millions in value. Whiskey rings were frequently discovered. A great quantity of liquor fraudulently taken from bond was seized in transit. "Boot-legging" was a common practice in various localities throughout the year and the smuggling of liquor across the Canadian border continued to give trouble. The amount of liquor withdrawn from warehouses during the year was placed at 43,000,000 gallons as compared with 81,600,000 the year before. From January 16 to November 30, 24,469 persons were arrested.

As a result of the order of the Commissioner of Internal Revenue that all ships carrying intoxicating liquors must have cleared customs by midnight of January 16 and that otherwise spirits were forfeitable, the exports of domestic spirituous liquors during the first sixteen days of the year amounted to \$14,178,793. See *UNITED STATES, Prohibition Convention.*

LITERATURE. ENGLISH AND AMERICAN. The year 1920 maintained a constant and high grade output of literature in various fields in spite of the difficulty of procuring paper and the indifferent quality of it even when procured, in spite of labor complications and the inevitable high cost of books to publisher and to reader. Taking an average of the several departments which may legitimately be called literature, we are probably justified in ranking the output of 1920 higher than that of any year since 1914 at least. The tremendous stimulus of the war has yet to show itself. It may however be consoling to reflect that, if such striking reaction is to show itself, it may, by historical precedent, take 20 years to do it in. Nevertheless, the effect of the war is increasingly to be seen in a growth of international and inter-racial interests, in a changing attitude toward both racial and industrial enfranchisement, and in a more honest rendering of the facts of life in fiction.

The number of personal narratives of the war has dwindled rapidly. But the continued appearance of such stories proves that publishers have not dogmatically shut the door in their faces, and the quality of such as have appeared shows a proper discrimination between what was only temporary and what may have permanent value. Outside of larger general histories of the struggle, the books of 1920 which dealt with the war were for the most part more intimate personal accounts or documents furnished by those in positions of authority, military or civil. Such records should have permanent historical value. For the most part, however, discussions of the war and its immediate effects have been displaced by inquiries of a wider scope and calmer judgment into problems of history—not forgetting Irish national aspirations—political science, particularly on its international side, economics, as represented largely in contemporary industrial problems, and sociology, especially as it concerns the applied phases of labor and religion. It is significant, also, that philosophy and religion are finding more in common, as evidenced by the fact that the more fruitful studies of the year have been in the philosophical and psychological phases of religion.

It was only natural that increasing facilities

for travel should increase the narratives of travel and out-door life, and the charm of the South Seas has been particularly potent over both publishers and readers this year. Books of essays have grown in number and quality, which means that many skillful pens are returning to their earlier loves. Biography for the year shows many titles, though little of unusual interest, unless our palates crave the spice of Margot Asquith and Colonel Repington. The novel maintains its position in numbers—almost double that of other departments—and exhibits also a sound development, particularly in the United States. The large number of collected short stories indicates the increasing interest in that form of fiction. The fields of poetry and of drama both continue to manifest the quickening of emotional life which has, at least, been co-incident with the war.

FICTION. Fiction for the year is of particular interest by reason of the striking way in which American novelists have realized the power and meaning of commonplace American life and have successfully combined the two essential elements of faithful realism in detail and sympathy in delineation and interpretation. For the first time in American literary history a half dozen novels offer an unsentimentalized yet illuminating picture of American life as it is actually lived by the vast majority of Americans in the new and crude and blatant, yet vigorous and potential communities in the small towns. In comparison with this group of American novels, with their fidelity to fact, their freedom from sophistication, their broad human sympathy, the English contemporaries seem limited and a bit devitalized, in spite of the richness of their material and the deftness of their technique. The old struggle of the individual against the tribal pressure is being staged—not in the complicated and artificial life of the great cities—but upon the Main streets that make the real America.

Out of the novels of the year a certain number call for detailed mention. *Miss Lulu Bett*, by Zona Gale, is a compact bit of sympathetic realism, keen in analysis, warm in humor, and pungent in phrase. Quite as unexpectedly, Sinclair Lewis has drawn in *Main Street* an unsentimentalized, yet understanding picture of life as it is symbolized by the small town. Edith Wharton has done a skillful satire of sophisticated New York in the late 70's, in *The Age of Innocence*. Joseph Conrad makes *Rescue* a powerful and atmospheric study of conflicting types and civilizations in his own romantic East. In *The Captives* Hugh Walpole interests himself in youth dominated and warped by its elders in the name of various religious creeds. May Sinclair displays an increasingly effective technique in the service of psycho-analysis in *The Romantic*; and Clemence Dane tries an interesting piece of preciosity in *Legend*. *One After Another*, by Stacy Aumonier, is the simple, sympathetic telling of an ordinary life. In *Chancery*, by John Galsworthy, continues the dissection of the possessive instinct in the Forsyte family; and *Mainwaring*, by Maurice Hewlett, concerns an egotist and demagogue in England of the 80's. Hewlett also writes *The Light Heart*. Sarah G. Millin, in *The Dark River*, shows the relentless working out of character and destiny against a vivid South African setting. In *A Gift of the Dark* R. O. Prowse describes the struggle for sane living by a man and a woman condemned by disease. A. P.

Herbert does some delicate work in *The House by the River*; and an anonymous writer contributes a much-talked-of social comedy laid in a Swiss chalet and entitled *In the Mountains*.

Distinguished mention must also be made of *Spendthrift Town*, a vivid picture of New York, by one who signs himself Henry Hudson, Jr.; of William McFee's study of men, a girl, and the sea, in *Captain Macedoine's Daughter*; of Francis Scott Key Fitzgerald's *This Side of Paradise*, a college-and-after story which has captivated younger readers; of Rose Macaulay's *Potterism*, a satire upon sentimentalism et al., which has pleased many; of *The Old Man's Youth and the Young Man's Age*, another posthumous novel by William De Morgan; of Compton MacKenzie's *Vanity Girl*; of J. D. Beresford's *The Imperfect Mother*; of Olive Eleanor Douglas' charming *Penny Plain*; of G. A. Birmingham's *Inisheeny*; of Eden Phillpotts' *Orphan Dinah*; of D. H. Lawrence's *The Lost Girl*; of E. V. Lucas' novel-sketch-book *Verena in the Midst*; of Hope Merrick's posthumous *Mary-Girl*; of W. L. George's *Caliban*; of W. H. Hudson's *Dead Man's Plack*; of Ida A. R. Wylie's *Children of Storm*; of William Dean Howells' posthumous *The Vacation of the Kelwyns*; of Margaret Deland's *An Old Chester Secret*; of Patrick MacGill's *Maureen*; of Catherine Carswell's feminist *Open the Door*; and of Sir Harry Johnston's second literary continuation, *Mrs. Warren's Daughter*.

Perhaps not less deserving of serious attention are Anne Douglas Sedgwick's psychic story, *The Third Window*; Mary Borden's study of divorce, *The Romantic Woman*; Mary S. Watts' Mid-Western *The Noon-Mark*; Sherwood Anderson's story of town-building, *Poor White*; Floyd Dell's study of youth, *Moon-Calf*; Edith Somerville's and Violet Martin's *Mount Music*; Horace Annesley Vachel's *Whitewash*; Alan Monkhouse's *True Love*; J. C. Snaith's *Adventurous Lady*; E. F. Benson's satire "*Queen Lucia*" and *The Countess of Lowndes Square*; Forrest Reid's story of adolescence, *Pirates of Spring*; Francis Brett Young and E. Brett Young's South Wales' story, *Undergrowth*; Gerald O'Donovan's *Conquest*; Carrol O'Riordan's *Adam of Dublin*; Mrs. E. B. C. Jones' *Quiet Interior*; Bohun Lynch's *Forgotten Realms*; William Caine's *The Strangeness of Noel Carton*; Alexander MacFarlan's *The Inscrutable Lovers*; Stephen McKenna's *Lady Lilith*; Brinsley MacNamara's grim *Clanking Chains*; Sir Philip Gibbs' post-war study, *Wounded Souls*; Margaret and Henry de Vere Stackpoole's *The Man Who Found Himself*; and Elizabeth S. Holding's rather pagan *Invincible Minnie*.

Fiction for the year was further represented by the following: *Basil Everyman*, by Elsie Singmaster; *Marbeck Inn*, by Harold Brighouse; *The Happy Woman*, by Maurice Wevl; *Mary Wollaston*, by Henry Kitchell Webster; *The Prairie Mother*, by Arthur Stringer; *I've Married Marjorie*, by Margaret Widdemer; *The Other Woman*, a case of dual personality, by Norah Davis; *A World to Mend*, a tract by Margaret Sherwood; *Growing Up and Men of Steel*, by Mary Heaton Vorse; *The Green Bay Tree*, a political study by Winston Churchill; *Painted Veils*, by James G. Huneker; the anonymous *Book of Marjorie*; *Free Soil*, a Kansas novel, by Margaret Lynn; *Happily Married*, by Corra Harris; *Double Life*, by Grant Richards; *Harvest*, the last book by Mrs. Humphrey Ward;

Tension, by E. M. Delafield; *The Green God's Pavilion*, a vivid story of the Philippines, by Mabel W. Martin. Most of these novels attempt a realistic picture of life or concern themselves with some social or psychic problem. Particularly concerned with problems are Ernest Poole's industrial tract, *Blind*; Andreas Latzko's pacifist *The Judgment of Peace*; Mary White Ovington's negro study, *The Shadow*; W. B. Maxwell's prodigious *A Remedy Against Sin*; Alice Brown's antipsiritualistic *The Wind Between the Worlds*; Clement Wood's *Mountain*; Adriana Spadoni's *The Swing of the Pendulum*; Basil King's *The Thread of Flame*; E. L. Grant Watson's *Deliverance*; and Rupert Hughes' *What's the World Coming To?*

Of somewhat less serious intent, though touching from time to time on the popular theme of spiritualism, are: St. John Edvine's *Foolish Lovers*; George Woden's *Our Peter*; Edgar Lee Master's *Mitch Miller*; Jessie Champion's humorous *Sunshine in Underwood*; J. E. Buckrose's *Young Hearts*; Helen R. Martin's *The Schoolmaster of Hesseville*; Douglas Goldring's *The Fortune*; Lee Wilson Dodd's *Book of Susan*; Edward M. Forster's *Where Angels Fear to Tread*; Francis W. Bain's *The Substance of a Dream*; Arthur Bullard's *The Stranger*; Gilbert Frankau's *Peter Jameson*; Irving Bachelor's *Prodigal Village*; Norma O. Lorimer's *With Other Eyes*; Eric Leadbitter's *Road to Nowhere*; Anthony Hope's *Lucinda*; Beatrice Mantle's *In the House of Another*; Almer Newton's *A Jewel in the Sand*; Mrs. Henry Dudeney's *Manhood End*; Louis Joseph Vance's *Dark Mirror*; Mary Johnston's *Sweet Rocket*; and *Just Open* by W. Pett Ridge. Other novels which must be mentioned are: *A Tale that is Told*, by Frederick Niven; *The Amorous Cheat*, by Basil Cheighton; *The Granite Hills*, by C. E. Weanley; *The Widow's Cruise*, by Hamilton Fyfe; *They Went*, by Norman Douglas; *Egan*, by Holworthy Hall; *John Seneschal's Margaret*, by Agnes and Egerton Castle; *A Poor Wise Man*, by Mary Roberts Rinehart; *Colour Blind*, by S. P. B. Mais; *Love of Brothers*, by Katherine Hinkson; *The Chinese Coat*, by Jennette Barbour Lee; *The Lost Fortnight*, by Mary A. Hamilton; and *The Headland*, by C. A. Dawson-Scott. In addition to these Edward Shanks writes *The People of the Ruins*; Christopher Stone, *The Valley of Indecision*; Joseph C. Lincoln sticks to Cape Cod in *The Portygee*; Cynthia Stockley returns again to the eerie in *Pink Gods and Blue Demons*; George Barr McCutcheon rebuilds society in *West Wind Drift*; Hal George Everts tells, in *Cross Pull*, an excellent dog story; and Robert W. Chambers and Harold Bell Wright, the ever popular, for opposite reasons, contribute respectively *The Slayer of Souls* and *The Re-creation of Brian Kent*—titles which it is interesting to compare.

New York's ghetto is represented by Bertha Pearl's *Sarah and Her Daughter*; Marie Ganz and Nat. J. Ferber's *Rebels*; and John Cournos' *Mask*. Historical novelists, it seems, have run to cover, leaving only: Charles S. Brooks, with *Luca Sarto*, a French and Italian adventure of around 1470; Justin Huntly McCarthy, with *Henry Elizabeth*, a narrative of sixteenth century England; and John Fox's last, *Erskine Dale*, *Pioneer*, a Revolutionary story.

That the publishers, if not the readers, are still pleased with thrills might be gathered from the number and excellence of the year's output of

adventure, crime, and mystery. Different spines are affected in different ways, but the following have thrilled many. Of adventure stories: Jack London's further legacy, *Hearts of Three*; Henry M. Rideout's *Foot-Path-Way*; Ralph D. Paine's *Ships Across the Sea*; Zane Grey's *Man of the Forest*; William P. White's *Paradise Bend*; James Oliver Curwood's *Valley of Silent Men*; Edwin Balmer's *Resurrection Rock*; James B. Connolly's *Hiker Joy*; Bennet Copplestone's *The Last of the Grenvilles*; Jeffery Farnol's *Black Bartlemy's Treasure*; Henry C. Rowland's *The Peddler*; George Kibbe Turner's *Hager's Hoard*; Talbot Mundy's *Told in the East*; and L. Frank Tooker's *Middle Passage*. There is also Ridgwell Cullum's *The Heart of Unaga*; Henry de Vere Stackpoole's *A Man of the Islands*; and once more our old friend Rider Haggard in *The Ancient Allan*. Crime, mystery, and the detective art exhibit themselves in *The Flying Bo'sun*, by Arthur Mason; *Malcolm Sage, Detective*, by Herbert Jenkins; *Samuel Lyle, Criminologist*, by Arthur Crabb; *The Cask*, by F. W. Crofts; *She Was Helena Cass*, by Lawrence Rising; *The Green Eyes of Bast*, by Sax Rohmer; *No Olue*, by John Hay, Jr.; *Vanishing Men*, by Richard Washburn Childs; *A Hand in the Dark*, by Arthur J. Rees; *The Paradise Mystery*, by James S. Fletcher; *The Man with Three Names*, by Harold MacGrath; *Gray Dusk*, by Octavus Roy Cohen; *From Now On and White Moll*, by Frank L. Packard; *The Fortieth Door*, by Mary Bradley; *The Skeleton King*, by Bernard Capes; and *Lotus Salad*, a South American tale by Mildred Cram. An inspired list of titles these, certainly. And what is more, Susan C. Jones writes *The La Chance Mine Mystery*; Harold Lamb, *Marching Sands*; Louis Tracy, *The Strange Case of Mortimer Fenley*; Maurice Leblanc, *The Secret of Sarek*; and Beatrice Ethel Grimshaw caps the list, perhaps, with *The Terrible Island*.

The year 1920 saw published in English, among many other titles, Martin Anderson Nexö's *Bitte, Girl Alive*; Johan Bojer's *Treacherous Ground*; Madelaine Marx's *Woman*; Louis Couperus' *The Tour* and *The Inevitable*; Jens Peter Jacobsen's *Niels Lyhne*; Pierre Benoit's *Atlantida*; three stories from the Spanish of Ramón Pérez de Ayalá; Shalom Aleichem's *Jewish Children*; Clemenceau's *The Surprises of Life*; Anatole France's *Little Pierre*; Garca Aranha's Brazilian novel *Canaan*; Rufino Blanco Fombona's Venezuelan *Man of Gold*; Dostoevskii's *Honest Thief*; Anton Chekhov's *Chorus Girl*; Wladslaw S. Reymont's *The Comédienne*; Knut Hamsun's *Hunger*; Sofja R. Nalkowska's *Kobiety*; and Blasco Ibanez's *Woman Triumphant* and *Enemies of Women*. There were also a half dozen books of short stories from as many foreign countries.

Volumes of short stories increased in number for the year 1920, the majority of the contributors being, as heretofore, Americans. There were Willa Seibert Cather's *Youth* and *The Bright Medusa*; Alice Hegan and Cale Young Rice's *Turn About Tales*; Mary Roberts Rinehart's *Affinities*; Francis Scott Key Fitzgerald's *Flappers and Philosophers*; Will Levington Comfort and Zamin Dost's *Son of Power*; Stewart Edward White's *Killer*; Henry James' posthumously issued *Master Eustace*, and four others: O. Henriana, a further collection of stories; Alice Brown's *Homespun and Gold*; Margaret Widdemer's *The Boardwalk*; Irvin Cobb's *Abandoned Farmers*

and *From Place to Place*; Melville Davisson Post's *The Mystery at the Blue Villa* and *The Sleuth of St. James Square*; Roy Octavus Cohen's *Come Seven*; Mrs. George Madden Martin's *Children in the Mist*; Mary Stewart Cutting's *Some of Us are Married*; Edna Ferber's *Half Portions*; and Stephen Leacock's second series of nonsense novels, *Winsome Winnie*. The best English collections were *My Neighbors* by Caradoc Evans; *Rort Allington Stories* by the late Robert E. Vernède; *Eve of Pasqua* by Richard Dehan; and *Tatterdemalion and Awakening* by John Galsworthy. There were also Anne Douglas Sedgwick's *Christmas Roses*; Ethel Dell's *Tidal Wave*; George A. Chamberlain's *Pigs to Market*; Arthur B. Baxter's *Blower of Bubbles*; Aldous L. Huxley's *Limbo*; Frank Linderman's sketches, *On a Passing Frontier*; Anzia Yezierska's ghetto stories, *Hungry Hearts*; Ida A. R. Wylie's *Holy Fire*; Seumas O'Kelly's fanciful *Golden Barque*; Seumas MacManus' *Top o' the Morning*; F. W. Moorman's *More Tales of the Ridings*; Rupert Hughes' *Momma and Other Unimportant People*; Rider Haggard's *Smith and the Pharaohs*; George Ade's *Hand-Made Fables*; and *The New Decameron, Second Day*. As for anthologies Edward J. O'Brien edits *The Best Short Stories of 1919*; Joseph L. French, *Masterpieces of Mystery and The Best Psychic Stories*; J. W. McSpadden, *Famous Detective Stories and Famous Psychic Stories*; William Dean Howells collected, before his death, a conservative *Great Modern American Stories*; Benjamin A. Heydrick issues a collection called *Americans All*; and there is an *O. Henry Memorial Award* volume containing 15 prize stories of 1919.

POETRY. The output of poetry for the year has been considerable, but there has been little of signal value. Of first importance undoubtedly are John Masfield's two contributions: *Enslaved*, a volume of poems showing a fine mellowing of the poet's soul, and *Right Royal*, an account of a steeple-chase; Edwin Arlington Robinson's *Launcelot and The Three Taverns*; Sara Teasdale's delicate *Flame and Shadow*; Winifred Welles' *The Hesitant Heart*; Gladys Cromwell's posthumous *Poems*; and William A. Percy's *In April Once*. With these must be bracketed Carl Sandburg's incisive *Smoke and Steel*, Vachel Lindsay's less effective *Golden Whales of California* and *The Golden Book of Springfield*; Edgar Lee Masters' Browningsque *Doomsday Book*; Conrad Aiken's *The House of Dust*; Stephen Vincent Benét's *Heavens and Earth*; Robert Underwood Johnson's *Collected Poems*; William Rose Benét's *Perpetual Light and Moons of Grandeur*; Francis Carlin's *The Cairn of Stars*; and Thomas Burke's *Song Book of Quong Lee of Limehouse*. There are also *Two Foemen*, by H. E. Palmer; *Ships and Folks*, by C. Fox Smith; *The Passenger*, by Helen Dircks; *Blue Smoke*, by Mrs. Karle Baker; *Poems*, by Walter de la Mare; *Birds*, by J. C. Squire; *Roamer*, by George E. Woodberry; *As the Wind Blows*, by Eden Phillpotts; *Neighbors*, by Wilfred Wilson Gibson; *The Happy Bride*, by Fryniwyd Tennyson Jesse; *Songs from the Journey*, by Wilton Agnew Barrett; and *Songs of Three Friends*, by John G. Neihardt.

It is necessary to chronicle also Alfred Noyes' *The Elfyn Artist*; Robert Bridges' *October*; Grace W. Conkling's *Wilderness Songs*; Robert Graves' *Country Sentiment*; John Chipman Farrar's *Forgotten Shrines*; Robert H. Hillyer's *Alchemy*;

Howard S. Buck's *Tempering*; D. H. Lawrence's *New Poems*; Max Bodenheimer's *Advice*; Hilda Conkling's quaint and delightful *Poems by a Little Girl*; *Flowers in the Grass*, by Maurice Hewlett; *The New Adam*, by Lewis Untermeyer; *Many, Many Moons*, by Lew R. Sarett; and *Junk-Man*, by Richard le Gallienne. In addition Harry Kemp published *Chanteys and Other Ballads*; Arthur Guiterman *Ballads of Old New York* and *Chips of Jade*, being renderings from the Chinese. Arthur Waley contributed *Japanese Poetry—The Uta*; Yone Noguchi *Japanese Hokkus*; and Witter Bynner *The Canticle of Pan*.

The position held by poetry to-day is indicated in part by the number of anthologies. These include: Louis Untermeyer's *Modern British Poetry* and *Modern American Poetry*; L. D. Walter's *Anthology of Recent Poetry* (British); W. K. Seymour's *Miscellany of British Poetry*; Margaret Widdemer's *The Haunted Hour*, a collection of ghost poems; William Stanley Braithwaite's *Anthology of Magazine Verse for 1919* and *Book of Modern British Verse*; Henry T. Schneitkind's *Poets of the Future*, a collection of college verse; *A Miscellany of American Poetry*; *Contemporary Verse Anthology*; and Harold J. Massingham's *Treasury of 17th Century Verse*.

DRAMA. Of books concerned with the contemporary drama the year 1920 shows several which may be listed here: Frank W. Chandler's *Contemporary Drama of France*; Lander MacClintock's *Contemporary Drama of Italy*; Oliver M. Saylor's *Russian Theater Under the Revolution*; Clayton Hamilton's *Seen On the Stage*; Roy Mitchell's *Shakespeare for Community Players*; Frederick Warde's *Fifty Years of Make-Believe*; and Agnes Platt's *Practical Hints on Playwriting*.

Professor George P. Baker, of Harvard, edits *Modern American Plays*, *Plays of the Harvard Dramatic Club*, and *The 47 Workshop*, second series. Other collections are: Stuart Walker's third volume of *Portmanteau Adaptations*; Samuel A. Eliot's second volume of *Little Theater Classics*; Pierre Loving and Frank Shay's *Fifty Contemporary One Act Plays*; and Burn Mantle's combination of digest and excerpt, *The Best Plays of 1919-20*.

Individual playwrights are pretty effectively represented by *A Kiss for Cinderella*, by James M. Barrie; *Pawns*, by John Drinkwater; *Back to Methuselah*, by G. B. Shaw; *Plays*, 4th series, by John Galsworthy; *Sophie*, by Philip Moeller; *The Dragon*, by Lady Gregory; *Sacred and Profane Love* and also *Body and Soul*, by Arnold Bennett; and *Beyond the Horizon* and also *Gold: The Straw*, by Eugene O'Neill. Significant also are D. H. Lawrence's *Touch and Go* and the *Widowing of Mrs. Holroyd*; Arthur Symonds' *Cesare Borgia*; Vernon Lee's *Satan the Waster*; Leslie Noel's *Three Plays*; Charles Rann Kennedy's *Army with Banners*; James Forbes' *The Famous Mrs. Fair*; Percy W. Mackaye's *Rip Van Winkle*, a folk-opera; Thacher H. Guild's posthumously published *Power of a God*, and *Other Plays*; George Middleton's *Masks*, six one act plays, and George Middleton and Guy Bolton's *The Light of the World*; Susan Glaspell's *Plays*; J. Hartley Manners' *Happiness and The Woeing of Eve*; and Edna Ferber and Newman Levy's farce, *\$1200 a Year*. In addition to these may be mentioned among a number of plays translated

into English: Maxim Gorky's *Night's Lodging: Ten Plays* by David Pinsky; and *Three Plays of the Argentine* translated by Jacob S. Farssett.

ESSAYS Among a considerable number of significant essays must be mentioned: *Sir Roger de Coverley and other Literary Pieces*, by James George Frazer; *Roman Essays and Interpretations*, by William W. Fowler; *Collected Essays and Reviews*, by William James; *Essays Speculative and Political*, by Arthur J. Balfour; *Modes and Morals*, by Katharine Fullerton Gerould; *Bedouins*, by James Gibbons Huneker; *Supers and Supermen*, by Philip Guedella. Many of this year's essays are concerned with phases of American life. Among these are: *Darkwater*, studies in negro life by W. E. B. DuBois; *Character and Opinion in the United States*, by George Santayana; *The American Credo*, a satire by George Jean Nathan and H. L. Mencken; *Prejudices, Second Series*, by H. L. Mencken; *Everyday Americans*, by Henry Seidel Canby; *Hey-Rub-a-Dub-Dub*, by Theodore Dreiser; *Democracy and Ideals*, by John Erskine; *People of Destiny*, by Sir Philip Gibbs; and *In the Days of the Pilgrim Fathers*, by Mary C. Crawford.

Other noteworthy volumes of essays are: Sir William Osler's posthumous work, *Old Humanities and the New Science*; George E. Woodberry's *Collected Essays*; Arnold Bennett's *Our Women*; G. K. Chesterton's *The Superstition of Divorce*, *The New Jerusalem*, and *The Uses of Diversity*; Maurice Hewlett's *In a Green Shade*; E. V. Lucas' *Specially Selected*, and *Adventures and Enthusiasms*; Walt Whitman's *Gathering of the Forces*, a collection of miscellaneous writings; and William Dean Howells, last work, *Essays*. There are also: Gilbert Cannan's *The Release of the Soul*; G. Lowes Dickinson's *The Magic Flute: a Fantasia*; A. A. Milne's *If I May*; Edward, Viscount Grey's *Recreation*; Christopher Morley's *Pipefuls*; Max Beerbohm's *And Even Now*; Charles Whibley's *Literary Studies*; Agnes Repplier's *Points of Friction*; John Stuart Mackenzie's *Arrows of Desire*; Carl Van Vechten's *In the Garret*; and Paul Rosenfeld's *Musical Portraits*.

CRITICISM AND THE HISTORY OF LITERATURE. Significant among the season's books on literary criticism in its various phases are the following: George Moore's *Avowals*; Van Wyck Brooks' *The Ordeal of Mark Twain*; Douglas Goldring's *Reputations*; *Essays in Criticism*; A. Clutton-Brock's *Essays on Books*; Charles M. Gayley and Benjamin P. Kurtz' *Methods and Materials of Literary Criticism*; "Solomon Eagle's" (J. C. Squire's) *Books in General, Second Series*; W. H. Mallock's *Memoirs of Life and Literature*; J. Middleton Murry's *Aspects of Literature*; Robert Lynd's *The Art of Letters*; Walter de la Mare's *Rupert Brooke and the Intellectual Imagination*; John Erskine's *The Kinds of Poetry*; Bliss Perry's *A Study of Poetry*; Conrad Aiken's *Scepticisms*; *Notes on Contemporary Poetry*; Mary C. Sturgeon's *Studies of Contemporary Poets*; James Russell Lowell's *The Function of the Poet, and other Essays*, for the first time collected in book form; Percy Holmes Boynton's *A History of American Literature*; Ashley H. Thorndike's *Literature in a Changing Age*; Blanche Colton Williams' *Our Short Story Writers*; George Henry Payne's *A History of Journalism in the United States*; Henry A. Beers' *The Connecticut Wits, and Other Essays*; Barrett

Wendell's *The Traditions of European Literature*; Isaac Goldberg's *Studies in Spanish-American Literature*; Mary Duclaux' *Twentieth Century French Writers*; Albert Schinz' *French Literature of the Great War*; Moissaye Joalph Olgin's *A Guide to Russian Literature (1820-1917)*; Joseph Collins' *Idling in Italy*; Thomas Dwight Goodall's *Athenian Tragedy*; Flora Ross Amos' *Early Theories of Translation*; William Roscoe Thayer's *The Art of Biography*; Henry C. K. Wyld's *Modern Colloquial English*; George C. D. Odell's *Shakespeare from Betterton to Irving*; Joseph Quincy Adams' *Shakespearean Playhouses*; Mark van Doren's *John Dryden*; James H. Robinson's *The Battle of the Books*; A. H. Cruickshank's *Philip Massinger*; Oscar W. Firkins' *Jane Austen*; Augustus Ralli's *Guide to Carlyle*; J. H. Whitehouse's *Ruskin the Prophet*; J. W. Graham's *The Harvest of Ruskin*; Francis C. Holland's *Seneca*; Watson Nicholson's *The Historical Sources of DeFoe's Journal of the Plague Year*; Myra Reynold's *The Learned Lady in England, 1650-1760*; and Frances Theresa Russell's *Satire in the Victorian Novel*.

BIOGRAPHY AND AUTOBIOGRAPHY. Among the important biographies and autobiographies are: the last two volumes of *The Life of Benjamin Disraeli*, by George E. Buckle; *Letters to X*, by John Harold Massingham; *Lord Grey of the Reform Bill*, by George Macauley Trevelyan; *The Autobiography of Margot Asquith*; *Mr. Balfour*, by E. T. Raymond; *Steeplejack*, by James Gibbons Huneker; *Lincoln, the World Emancipator*, by John Drinkwater; *Theodore Roosevelt and His Time*, by Joseph B. Bishop; *Talks with T. R.*, by John J. Leary; *The Letters of Henry James*; *The Letters of William James*, edited by his son, Henry James; *The Autobiography of Andrew Carnegie*; *My Quarter-Century in American Politics*, by Champ Clark; *The Life of Joseph Hodges Choate*, by Edward S. Martin; *The Pastor of the Pilgrims*; *a Biography of John Robinson*, by Walter H. Burgess; *A Cycle of Adams Letters*, by Charles Francis, Charles Francis, Jr., and Henry Adams; *Letters to a Niece and Prayer to the Virgin of Chartres*, by Henry Adams; *The Americanization of Edward Bok*, by Edward W. Bok; *The Story of Opal*, by Opal Whiteley; *The Youth of James Whitcomb Riley*, by Marcus Dickey; *Memoirs of Buffalo Bill*, by Louisa Cody; *Autobiography of Buffalo Bill*, by William F. Cody. There were also: the *Life of Thomas Coutts, Banker*, by Ernest H. Coleridge; *Life of Lord Kitchener*, by Sir George C. A. Arthur; *Francis and Riverdale Grenfell*, by John Buchan; *Memoirs from My Life*, by Gen. Paul von Hindenburg; *Venizelos*, by Herbert Adams Gibbons; *Villiers*; *His Five Decades of Adventure*, a fascinating account by Frederick Villiers; *Memoirs of the Empress Eugenie*, by Comte Fleury; *Robert Owen*, by Joseph McCabe; *Mazzini's Letters to an English Family*, edited by E. F. Richards; *Mrs. Gladstone*, by Mary Gladstone Drew; *Reminiscences of Tolstoy*, by Maxim Gorky; *Letters of Anton Chekhov to His Family and Friends*, translated by Mrs. Garnett. In addition to these appeared: *George Meredith*, by S. M. Ellis; *Memoirs of George Meredith*, by Alice May Butcher; *Our Family Affairs*, by E. F. Benson; *Personal Aspects of Jane Austen*, by M. Austen-Leigh; *Herbert Beerbohm Tree*, edited by Max Beerbohm; *A Last Diary*, by W. N. P. Barbellion; *Some Contemporary Novelists (Women)*, by R. B. Johnson; *Life of William Booth*, by

Harold Begbie; *Finding a Way*, by Robert R. Moton; *Day Before Yesterday; Reminiscences of a Varied Life*, by Maitland Armstrong; *A Quaker Singer's Recollections*, by David Bispham; *Recollections*, by Georgianna Adelaide Peel; *The Reign of Patti*, by Herman Klein; *Frederick Locker-Lampson*, by Augustine Birrell; *Letters of a Japanese Princess*, by Raden Kartini; *Looking Back*, by Sir Seymour John Fortescue; *Wild Turkeys and Tallow Candles*, by Ellen Hayes; *From Friend to Friend*, a volume of recollections by Thackeray's daughter, Anne Isabella Ritchie; and, finally, *Memoirs*, by Lord Redesdale.

FINE ARTS. Noteworthy among books dealing with the Fine Arts are: Jay Hambridge's *Dynamic Symmetry: The Greek Vase*; Bernard van Dieren's *Epstein and His Work*; Lorado Taft's *Modern Tendencies in Sculpture*; Joseph Pennell's *The Graphic Arts*; Martin Birnbaum's *Introductions: Painters, Sculptors, and Graphic Artists*; Samuel Colman and C. A. Coan's *Proportional Form*; G. T. Rivoira's *Moslem Architecture*; Winefride de L'Hopital's *Westminster Cathedral and Its Architect*; *Modern Movements in Painting*, by Charles Marriatt; *Japanese Color Prints*, by Basil Stewart; *Chinese Painters*, by Raphael Petrucci; *Principles of Aesthetics*, by Henry D. Parker; and *The American Expeditionary Forces in Action*, drawings by Capt. George Harding.

PHILOSOPHY, PSYCHOLOGY, AND THE SCIENCES. Among the significant books on philosophy, psychology, and science are: Henri Louis Bergson's *Mind-Energy*; George Wilhelm Friedrich Hegel's *The Philosophy of Fine Art*, translated by F. P. B. Osmaiston; Josiah Royce's *Lectures on Modern Idealism*; G. Stanley Hall's *Morale*; Francis S. Marvin's *Recent Developments in European Thought*; C. A. Richardson's *Spiritual Pluralism and Recent Philosophy*; Reinhold Hoernle's *Studies in Contemporary Metaphysics*; John B. Bury's *The Idea of Progress*; John Cowper Powys' *The Complex Vision*; H. Wildon Carr's *The General Principle of Relativity*; Albert Einstein's *Relativity*; George Santayana's *Little Essays*, a compilation from Santayana's works by D. P. Smith; John M. Mecklin's *Introduction to Social Ethics*; John Theodore Merz' *A Fragment on the Human Mind*; William S. Walsh's *The Psychology of Dreams*; William Alanson White's *Thoughts of a Psychiatrist on the War and After*; W. R. Sorley's *The History of English Philosophy*; Frederick Soddy's *Science and Life*; and J. Arthur Thomson's *The System of Animate Nature*.

RELIGION. Significant among works on religion are: *Religious Consciousness*, by James B. Pratt; *The New Social Order*, by Harry F. Ward; *Pagan and Christian Creeds*, by Edward Carpenter; *Europe and the Faith*, by Hillaire Belloc; *Where Science and Religion Meet*, by William Scott Palmer; *Religion and the New Psychology*, by Walter T. Swisher; *Divine Personality and Human Life*, by Clement C. J. Webb; *Can the Church Survive the Changing Order*, by Albert Parker Fitch; *Education for Democracy*, by Henry F. Cope; *It's a Good Old World*, by Bruce Barton; *A Jewish View of Jesus*, by H. G. Enelow; *The Life and Letters of St. Paul*, by David Smith; *The Apocalypse of John*, by Isbon T. Beckwith; *St. Luke, The Man and His Work*, by Herbert MacLachlan; *The Book of Job*, by Morris Jastrow; *The Lollard Bible*, by Margaret Deanesley; *Spiritualism*; *A Popular History*

from 1847, by Joseph McCabe; *The Doughboy's Religion*, by Ben B. Lindsay and Harvey O'Higgins.

SOCIOLOGY AND EDUCATION. Of the books on sociology and education, the following are noteworthy: *The Principles of Sociology*, by Edward H. Ross; *Social Theory*, by George D. H. Cole; *What The Workers Want*, by Arthur H. Gleason; *The Casual Laborer*, by Carleton H. Parker; *The Intellectuals and the Wage Workers*, by Herbert Cory; *Common Sense and Labor*, by Samuel Crowther; *The New Industrial Unrest*, by Ray Stannard Baker; *Labor and the Common Welfare*, by Samuel Gompers; *Current Social and Industrial Forces*, edited by Lionel D. Edie; *Organized Labor in American History*, by Frank T. Carlton; *The Great Steel Strike and Its Lessons*, by William Z. Foster. There are also: *The Group Mind*, by William McDougall; *The Ground and Goal of Human Life*, by Charles G. Shaw; *Economic Liberty*, by Harold Cox; *Primitive Society*, by Robert H. Lowie; *Children of the Slaves*, by Stephen Graham; *The Rising Tide of Colour*, by Lothrop Stoddard; *Cause of World Unrest*, anonymous; *Human Costs of the War*, by Homer Folks; *Liberty and the News*, by Walter Lippmann; *Liberalism in America*, by Harold E. Stearns; *The Brass Check*, by Upton Sinclair; *Satanism and the World Order*, by Gilbert Murray; *The Unsolved Riddle of Social Justice*, by Stephen Leacock; *A Defence of Liberty*, by Oliver Brett; *The Place of Science in Modern Civilization, and other Essays*, by Thorstein B. Veblen; *The New Frontier*, by Guy Emerson; *Educational Sociology*, by W. E. Chancellor; *The Liberal College*, by Alexander Meiklejohn; *The College and the New America*, by Jay William Hudson; *The Human Factor in Education*, by James P. Munroe; *A Lover of the Chair*, by Sherlock B. Gass; and *Education During Adolescence*, by Ransom A. Mackie.

POLITICAL SCIENCE AND ECONOMICS. Among the more important books for the year on politics and economics may be listed: John Foster Bass' *The Peace Tangle*; G. Lowes Dickinson's *Causes of International War*; G. P. Gooch's *Nationalism*; C. F. G. Masterman's *The New Liberalism*; Charles G. Fenwick's *Political Systems in Transition*; Bertrand Russell's *The Practice and Theory of Bolshevism*; John Spargo's *Greatest Failure in All History and Russia as an American Problem*; R. W. Postgate's *The Bolshevik Theory*; Harry W. Laidler's *Socialism in Thought and Action*; J. Bruce Glaisier's *The Meaning of Socialism*; Sidney and Beatrice Webb's *A Constitution for the Socialist Commonwealth of Great Britain*; J. Ramsay MacDonald's *Parliament and Revolution*; J. H. Thomas' *When Labour Rules*; A. F. Pollard's *The Evolution of Parliament*; Charles Edward Russell's *The Story of the Non-Partisan League*; Herbert E. Gaston's *The Non-Partisan League*; G. H. D. Cole's *Guild Socialism Re-Stated*; L. S. Woolf's *Economic Imperialism*; and *Empire and Commerce in Africa: A Study in Economic Imperialism*; C. H. Douglas' *Economic Democracy*; Henry Adams' *The Degradation of the Democratic Dogma*; Elisha M. Friedman's *America and the New Era*, a symposium on social reconstruction; Herbert A. L. Fischer's *Studies in History and Politics*; *The Taint in Politics*, anonymous; R. L. Buell's *Contemporary French Politics*; A. M. Pooley's *Japan's Foreign Policies*; and W. W.

Willoughby's *Foreign Rights and Interests in China*.

HISTORY. Of the books of general history, the following are important: H. G. Wells' monumental and controversial autobiography entitled *The Outline of History*; Ramsay Muir's *A Short History of the British Commonwealth*, volume I; Viscount Haldane's *Before the War*, concerned with British attempts to avert the war; Abbott Payson Usher's *An Introduction to the Industrial History of England*; William T. Morgan's *English Political Parties and Leaders during the Reign of Queen Anne*; Walter G. Bell's *The Great Fire of London in 1666*; C. H. Lockitt's *The Relations of English and French Society, 1768-1793*. On Ireland: Robert Lynd's *Ireland a Free Nation*; Grenville H. J. Cole's *Ireland the Outpost*; and D. A. Chart's *The Economic History of Ireland*. There are also: Wallace E. Caldwell's *Hellenic Conception of Peace*; J. A. Farrer's *The War for Monarchy*; Janet Penrose Trevelyan's *A Short History of the Italian People*; Maurice G. Hindus' *The Russian Peasant and the Revolution*; Richard Dawson's *Red Terror and Green*; the Sinn Féin-Bolshevist Movement; Reginald C. F. Maugham's *The Republic of Liberia*. Americas are represented in: David Jayne Hill's *American World Policies*; Frederick J. Turner's *The Frontier in American History*; Archibald Henderson's *The Conquest of the Old Southwest*; Willis F. Johnson's *The History of Cuba*, five volumes; Blasco Ibanez' *Mexico in Revolution*; Edith O'Shaughnessy's *Intimate Pages of Mexican History*; Cunningham Graham's *A Brazilian Myatio*; and Joseph B. Lockey's *Pan-Americanism*. Asia appears in: William M. McGovern's *Modern Japan*; Frank Brinkley and Dairoku K. Kuchi's *History of the Japanese People*; Sih Gung Cheng's *Modern China*; Frederick A. McKenzie's *Korea's Fight for Freedom*; Morris Jastrow's *The Eastern Question and Its Solution*; and Kevork Astan's *Armenia and the Armenians*.

Of books relating to the war, the more noteworthy are: *The First World War, 1914-1918*, by Col. Charles & C. Repington; *A Brief History of the Great War*, by Carleton J. H. Hayes; *A Short History of the Great War*, by Albert F. Pollard; Volume V of *History of the World War*, by Frank Simonds; *History of the War*, by H. C. O'Neill; Sir Archibald Murray's *Despatches*; *The General Staff and Its Problems*, by General Ludendorff, translated from the German; *The German General Staff and Its Decisions*, by Gen. von Falkenhayn; *Letters from the Kaiser to the Czar*; *Naval Operations*, by Sir Julian Stafford Corbett; *The Victory at Sea*, by Rear-Admiral Sims; *The United States in the World War*, by John Bach McMaster; *My Three Years in America*, by Count von Bernstorff; *The Dardanelles*, by Charles Edward Callwell; *A Gallipoli Diary*, by Gen. Sir Ian Hamilton; *My Campaign in Mesopotamia*, by Gen. Sir Charles V. F. Townshend; and *Last Days of the Romanoffs*, by Robert Wilton.

Among the books about the Peace Conference, we find the following: *The Economic Consequences of the Peace*, by John M. Keynes; *Some Problems of the Peace Conference*, by Charles H. Haskins and Robert H. Lord; *The Making of the Economic and Reparation Sections of the Treaty*, by Bernard M. Baruch; *International Law and the World War*, by J. W. Garner; *The Inside*

Story of the Peace Conference, by E. J. Dillon; *History of the Peace Conference of Paris*, edited by H. W. V. Temperley; *The Nations and the League*, by 10 representatives of different nations, including Leon Bourgeois, Sir George Paish, Nicholas Murray Butler, and others; and *England After the War*, by Frank Dillnot.

Of war narratives, the following may be noted: *Cardinal Mercier's Own Story*; Evelyn, Princess Blucher's *An English Wife in Berlin*; Philip Gibbs' *Now It Can Be Told*; Elias Henry Jones' *The Road to En-Dor*; Francis Charles C. Yeats-Brown's *Caught by the Turks*; Col. John Ward's *With the Die-Hards in Siberia*; Vira Whitehouse's *A Year as a Government Agent*; and J. C. Lawson's *Tales of Aegan Intrigue*.

TRAVEL AND OUT OF DOORS. Among the noteworthy books of travel and the out-of-doors we may mention: Hector McQuarrie's *Tahiti Days*; A. Safroni-Middleton's *South Sea Foam*; Fredrick O'Brien's *Drifting Among South Sea Isles*; Walter Pritchard Eaton's *In Berkshire Fields and On the Edge of the Wilderness*; Harry A. Franck's *Roaming through the West Indies*; Joseph Hergesheimer's *San Cristobal de la Habana*; John G. Neihardt's *The Splendid Wayfaring*; Rockwell Kent's *Wilderness*, describing Alaska; Hudson Stuck's *A Winter Circuit of Our Arctic Coast*; Charlotte Cameron's *A Cheechako in Alaska and the Yukon*; William B. Cabot's *Labrador*; Rudyard Kipling's *Letters of Travel*; Beatrix Bulstrode's *A Tour in Mongolia*; V. C. Scott O'Connor's *The Charm of Kashmir*; Sidney Greenbie's *Japan, Real and Imaginary*; A. S. Roe's *Chance and Change in China*; John and Alice Hattie Dewey's *Letters from China and Japan*. Of interest also are: Mrs. Cecil Clementi's *Through British Guiana to the Summit of Koraima*; E. Hadfield's *Among the Natives of the Loyalty Group*; Harold Raeburn's *Mountain-ering Art*; Frederick Hale's *From Persian Up-lands*; H. G. Mainwaring's *A Soldier's Shikar Trips*; William S. Maugham's *The Land of the Blessed Virgin*; Eliza Osborn Heaton's *By-Paths in Sicily*; Lewis R. Freeman's *In the Tracks of the Trades*; William Dean Howells' *Hither and Thither in Germany*; Archibald Marshall's *A Spring Walk in Provence*; Enos A. Mills' *Adventures of a Nature Guide*; *The West African Negro*, by G. T. Basden; *The Call of the Surf*, by Van Campen Heilner and Frank Stick; *The Art of Lawn Tennis*, by W. T. Tilden; *The Glamour of Prospecting*, by F. C. Cornell; *The Book of Good Hunting*, by Henry Newbolt; and *Garden of Peace*, by H. Frankford Moore.

LITHUANIA. A newly created republic whose boundaries in 1920 had not been definitely established, but comprised roughly, nearly all the former government of Kovno, the greater part of the government of Suvalki and a part of the government of Vilna. The following estimates were supplied by the United States Bureau of Foreign and Domestic Commerce in 1920:

According to Russian statistics, this territory had in 1914 a population of about 2,400,000. Taking into consideration, however, that a considerable proportion of the population was forced to evacuate during the war, the present population is probably rather under than over 2,000,000; according to some estimates it is not over 1,500,000. The table opposite shows the distribution of population in 1914:

	Kovno	Vilna	Grodno	Suwalki	Total
Area in square verst ^a	35,316	36,826	33,900	10,825	116,867
Number of inhabitants.....	1,857,100	2,075,900	2,048,200	718,000	6,699,200
Number of inhabitants per square verst ^a	53	56	60	66	59
Number of administrative units:					
Town administration.....	9	10	25	10	54
Rural administration.....	141	147	178	92	558

^a Square verst = 0.44 square mile.

For discussions of boundary disputes and the respective claims of Poland and Lithuania as well as the terms of the treaty with the Soviet government on July 12th, see below under *History* and the article *WAR OF THE NATIONS*.

PRODUCTS. The country is primarily agricultural and a very large proportion of the people live in the country districts. In 1914 it was 80 per cent. The resources include timber, grain, potatoes, flax and cattle, among the principal ones. As it had no well developed industrial system it suffered less than the other Baltic regions during the war. There was a comparatively small falling off in the area of grain cultivation in 1919 as compared with 1914; nor was the production greatly diminished. In 1919 the area under grain was placed at 3,132,000 acres and the production at about 1,129,000 tons. Potatoes were produced in the same quantity in 1919 as in 1914 and the production of flax and linseed considerably increased. A little over 50 per cent of the land is held by peasant proprietors and the state owns a little less than 13 per cent. During the war the estates of the large land-owners suffered more than the peasant farms. They are estimated at about 30 per cent of the total area of cultivated land. Cattle-raising is important, but it is carried on by primitive methods and the same is true of dairying. The chief natural resource of the country is the forests which cover an enormous area, the largest being the forest of Bialowiez in the province of Grodno. A little over 50 per cent of the forests belonged to the large estates and 44.26 per cent was the property of the Russian crown and presumably passed over to the new Lithuanian government.

COMMERCE. In the past the principal articles of export were grain, cattle, poultry, pork, eggs, butter, timber, linseed, flax, hides, and wool; and the chief imports, manufactured articles. The following information in regard to commerce was supplied by the United States Bureau of Domestic and Foreign Commerce: The only available information in regard to trade is given by statistics compiled during the war by the Polish society at Petrograd. According to this report, the Lithuanian governments of Kovno, Grodno, and Vilna, taken as a unit, had a positive trade balance of 11,500,000 francs (franc = \$0.193 normal exchange). Kovno led with a positive balance of 16,000,000 francs, Grodno followed with a positive balance of 3,000,000 francs, and the third place was occupied by Vilna with a negative balance of 7,000,000 francs. The principal imports consisted of textiles, 47,000,000 francs; cereals (mostly wheat flour), 24,500,000 francs; and sugar, 22,200,000 francs. The principal exports were timber and timber products, 68,000,000 francs; woolen goods, 49,500,000 francs; tanned leather, 53,000,000 francs. The annual export of flax amounted to 9,600,000 francs. The exportation of flax has been made a government monopoly; and maximum prices were fixed at which the peasants were obliged to give up their holdings. It was estimated by the government

that the peasants were still holding Jan. 1, 1920, some 15,000 tons of the 1918 crop of flax.

FINANCE. The legal tender of the country is the ostmark which was introduced by Germany in 1915 and which has been exchanged at the same value as the reichsmark. As to the amount of circulation, the following figures were given in 1920 by a British report: The total amount issued was about 1,250,000,000 marks, which, however, was not confined to Lithuania but circulated throughout the occupied regions of Russia. The amount now in circulation in Lithuania proper is estimated at about 800,000,000 marks. In addition to this currency there is probably a total of 200,000,000 reichsmarks in circulation.

The state property was estimated according to a British authority as follows in 1919: State forests, £47,445,500; confiscated lands, £7,371,000; state lands, £8,840,000; other property and lands and water, £10,000,000; total, £71,650,500, exclusive of state property and railways, etc.

COMMUNICATIONS. The following information in regard to transportation was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: The total length of rivers in the governments of Kovno, Vilna, and Grodno is nearly 8000 kilometers (4970 miles). Of this, in round figures, 1700 kilometers (1050 miles) are navigable for boats while the rest is navigable only for rafts. Of principal importance is the River Niemen connecting Lithuania with the Baltic Sea. By means of the Oginsky Channel, the Niemen is connected with the Dnieper and the Black Sea. Before the war the shipping on the Niemen averaged 2,000,000 tons per year. Of this 1,780,800 tons were carried on rafts, about 300,000 tons on vessels other than steamships, and 9,800 tons on steamships.

The railway system of Lithuania (present borders) consists of 880 kilometers (547 miles) of track. All of this has been changed by the Germans from Russian to standard gauge. In addition, there are 654 kilometers (406 miles) of narrow-gauge railways of from 60 to 100 centimeters (centimeter = 0.39 inch) gauge. Of the standard-gauge railways, 80 per cent are in operation and of the narrow-gauge, about 50 per cent. The rolling stock for the standard gauge consists of 74 locomotives, mostly German, 60 cars for passenger trains, and 719 freight cars. For the narrow gauge there are 28 locomotives, 36 passenger cars, and 461 freight cars. A large proportion of the rolling stock is not in working condition and badly needs repairs which are impossible owing to lack of material and repair parts. The fuel used is wood.

GOVERNMENT. In 1917, 200 representatives of the people met at Vilna and chose a state council. A proclamation of independence was issued, Feb. 16, 1918, and by the beginning of 1920 the authorities in control were recognized as a *de-facto* government by the following Powers: Great Britain, the Holy See, Sweden, Norway, Denmark, and Finland. The government was recognized as a government *de jure* by Italy and Germany. On April 4, 1919, a provisional con-

stitution was adopted to remain in force until a constituent assembly should have framed a permanent constitution. Under this provisional constitution, executive power is vested in a president, who is assisted by a cabinet of ministers, and the legislative power is vested in a state council to which the cabinet is responsible. By the provisional constitution, all class privileges were abolished and equal rights were bestowed on all citizens without distinction of race, sex or religion. The basis for the election of the constituent assembly was to be universal adult suffrage, irrespective of sex. The state council at the beginning of 1920 consisted of 40 members, of whom 30 were Lithuanians, seven White Ruthenians and three Jews. At the beginning of the year the president, prime minister, and minister of finance and commerce was M. Galvananski a member of the Popular Socialist party.

HISTORY. On September 20 the Council of the League of Nations took up the matter of peace with Lithuania. The Bolshevik government after long negotiations with Lithuania had come to an agreement with that state and a treaty of peace was signed at Moscow, July 12. A few days before (July 6), Poland had agreed to recognize the independence of Lithuania. In the treaty between the Soviet government and Lithuania, the former recognized Lithuanian independence, released the country from its share of the old Russian debt, promised the payment of 3,000,000 rubles in gold, and defined the boundary. The limits were to include the cities of Vilna, Lida, and Grodno and certain parts of the province of Grodno which were inhabited by Lithuanians. The Bolsheviks handed over Vilna, the ancient capital, after having occupied it for three weeks. The treaty, however, surrendered to Lithuania territories claimed by the Poles, who asserted their rights over the old province of Suwalki, a part of Grodno, the city of Vilna itself and certain other portions. The treaty boundaries cut off Lithuania from Russia and bestowed on Poland a corridor running between Russian and Lithuanian territories to the border of Latvia and thence through a point northwest of Minsk past the Oginski canal along the Pripiet to the Rumanian frontier. This made the Polish line nearly what it had been after the second partition of Poland in 1793. The Polish territory was larger than that fixed by the Peace Conference, but on behalf of the Poles it was argued that the added portion had a considerable Polish population and that since the Russians were willing to grant it, there was no reason why the Council of the League should object, especially as the Treaty had left the boundary on the east indeterminate. After the Poles had driven back the Soviet troops and cleared the frontier the natives turned against them and in so doing were believed to be acting under Bolshevik suggestion and in the hope of gaining territory for themselves. Negotiations were undertaken for a peaceful settlement but these ceased on the advance of the Poles, and as a result of their demand that they should make use of the Lithuanian railways and should occupy Vilna, provisionally. It was at this time that the Riga government sent protests to the Allies and to Washington, and Lithuanian delegates in United States asked the Secretary of State to stop the shipment of arms to Poland and to demand the withdrawal of Polish troops from Lithuania. On September 2 the Lithuanians

checked the Polish troops and recaptured the town of Seiny. Lithuania now proposed a new peace settlement to Poland. This was the state of affairs when the Council of the League of Nations on September 21 took up the question. Polish and Lithuanian delegates appearing before the Council asserted their desire for peace. The Council decided to mediate and commissioners were appointed to visit Poland and Lithuania and study their respective demands. They met at Suwalki in the first week of October and proposed the line which the Council had defined in December, 1919. The Poles were induced to accept this, but they objected to turning over to Lithuania under the Treaty with Soviet Russia, Lida, Grodno, and Vilna, especially the last named, where it was said that many Poles had been massacred by the Bolsheviks during their occupation. Then occurred the Zellgouski episode (See WAR OF THE NATIONS). After resigning from the Polish army, General Zellgouski in command of two Polish divisions, occupied Vilna, October 9, thus creating a situation not unlike that brought about by the adventure of D'Annunzio at Fiume.

LIVE STOCK. The following table shows the volume of meat production in the United States according to estimates of the United States Department of Agriculture for the calendar years 1917, 1918, 1919, and 1920, the latter being based on data for the first nine months and subject to correction. Figures are shown in millions of pounds:

	1917	1918	1919	1920
Beef	6,658	7,650	6,571	6,058
Veal	781	815	851	941
Pork	8,450	11,248	11,888	10,458
Lamb and mutton ..	478	522	626	570
Goat	18	15	9	6
Total	16,325	20,250	19,445	18,028

Production in 1920, as estimated, is 92.71 per cent of that in 1919. Still further reductions may be expected during 1921 and in the case of beef production in 1922 also.

Reports to the United States Department of Agriculture indicate a decided reduction in the calf and pig crop of 1920 as compared with 1919. For every 1000 head on hand January 1 the births of calves for the first seven months were: 1920, 327; 1919, 409; of hogs, 1920, 1128; 1919, 1290. Deaths of cattle and hogs were also greater in 1920 and the number of animals purchased was less. The number remaining on August 1 of each year for each 1000 on hand January 1, was as follows: Cattle, 1920, 1040; 1919, 1139; hogs, 1920, 1298; 1919, 1351. Similar information appears in the Department's estimates of the number of hogs on farms on September 1. There were 62,073,000 on Sept. 1, 1919, and 56,534 on the same date in 1920—a decline of 8.9 per cent. Some persons in touch with the swine industry in the corn belt are inclined to think that the decrease is greater than this in the large pork producing sections. If so, these declines are offset to some extent by the increase in hog raising elsewhere, especially in the Southern States.

The export of meat products reached its highest point both in volume and value during the fiscal year ended June 30, 1919, during which period almost three and one-third billion pounds of meat went abroad. Dairy products likewise

reached their maximum in exports during this time. The following table shows these facts in detail:

half the amount exported during the same period of 1919, the largest relative declines being in canned beef (23 per cent), bacon (55 per cent),

EXPORTS OF MEAT AND DAIRY PRODUCTS, FISCAL YEAR ENDED JUNE 30, 1919

	1918 Quantity Pounds	1918 Value Dollars	1919 Quantity Pounds	1919 Value Dollars	1920 Quantity Pounds	1920 Value Dollars
Beef, canned	97,843,283	30,034,707	108,459,660	44,803,015	81,166,814	9,386,860
Beef, fresh	370,032,900	67,888,426	332,205,176	79,227,540	153,560,647	32,566,746
Beef, pickled	54,467,910	7,702,524	45,065,641	9,085,183	32,383,501	5,880,766
Oleo oil	56,803,888	12,152,787	59,292,122	15,670,854	74,629,394	21,113,000
Oleomargarine	6,309,896	1,681,267	18,570,406	5,179,429	20,952,180	6,047,413
Tallow	5,014,964	981,941	16,172,111	2,325,177	32,897,026	5,738,181
Stearin	10,360,030	2,181,817	11,537,284	2,309,979	22,505,602	4,717,748
Bacon	815,294,424	221,478,957	1,238,247,321	378,416,797	803,666,917	233,327,904
Hams and shoulders	419,571,869	108,106,862	667,240,022	204,464,995	275,455,931	82,633,460
Lard	392,506,855	98,216,856	724,771,383	210,175,908	587,224,549	171,523,351
Neutral lard	4,258,529	1,074,603	17,395,888	5,392,710	23,202,027	6,916,279
Pork, canned	5,194,468	1,731,885	5,273,329	1,997,215	3,261,967	1,480,364
Pork, fresh	21,890,288	5,226,982	19,644,888	6,065,267	27,224,941	7,927,611
Pork, pickled	33,221,502	7,545,011	31,503,997	7,444,282	41,680,819	9,688,237
Sausage, canned	5,787,108	1,487,874	8,503,580	2,782,551	7,034,150	2,299,878
Sausage, other	9,289,341	3,282,681	9,721,925	3,882,751	14,750,963	6,185,120
Casings	6,173,578	3,014,537	13,524,093	4,938,202	24,379,414	6,284,587
Poultry and game	1,241,144	1,241,144	3,799,348	3,799,348	.....	1,627,033
All other canned	5,700,738	5,700,738	15,022,429	15,022,429	.....	7,060,537
All other	6,768,007	6,768,007	9,827,160	9,827,160	.....	8,021,757
Beef products	600,132,371	122,017,969	591,802,394	158,201,177	867,995,164	85,450,714
Pork products	1,706,463,884	448,095,661	2,722,801,833	820,612,476	1,783,502,064	521,387,104
Mutton products	2,098,423	453,232	2,173,994	511,065	8,958,131	815,452
Meat	2,308,694,678	570,566,862	3,816,778,221	979,826,718	2,155,455,359	607,553,270
Lard compounds	31,278,882	6,633,640	128,157,327	31,138,158	44,195,842	11,850,311
Butter	17,735,966	6,852,727	33,739,960	10,843,522	27,155,834	15,491,982
Cheese	44,803,076	10,785,153	18,791,553	5,783,029	19,878,158	6,388,178
Condensed milk	528,759,232	68,045,944	728,740,509	99,970,769	710,533,270	104,862,069
Total meat .....	.....	593,924,928	.....	1,043,950,015	.....	642,498,095
Total meat and dairy .....	.....	679,885,794	.....	1,166,110,958	.....	771,006,760

Still more illuminating is the information shown in the following table for exports of meat and dairy products for the calendar year 1919 and for the nine months ended Sept. 30, 1919 and 1920:

hams and shoulders (73 per cent), and canned pork (63 per cent). The value of all meat products exported during the first nine months of 1920 was 60 per cent of that exported during the same period of 1919 and the value of meat

EXPORTS OF MEAT AND DAIRY PRODUCTS FOR THE CALENDAR YEAR 1919, AND FOR 9 MONTHS ENDED SEPTEMBER 30, 1919 AND 1920

	12 months, 1919 Quantity Pounds	9 months, 1919 Quantity Pounds	Value Dollars	9 months, 1920 Quantity Pounds	Value Dollars
Beef, canned	53,888,090	48,794,233	18,817,857	23,314,912	5,092,708
Beef, fresh	174,469,910	121,543,894	28,561,714	61,489,950	16,795,385
Beef, pickled	42,624,724	33,089,581	6,812,908	19,140,803	2,772,220
Oleo oil	75,586,164	55,669,419	16,161,871	49,271,177	11,954,388
Oleomargarine	22,939,689	19,067,810	5,459,993	14,052,993	3,906,836
Tallow	38,958,783	32,422,780	5,104,294	13,924,037	2,135,392
Stearin	20,888,874	14,124,691	2,710,619	13,346,346	2,817,072
Bacon	1,199,297,806	1,009,564,046	320,877,174	460,161,522	115,089,503
Hams and shoulders	596,799,663	551,176,109	175,877,452	100,769,259	41,147,640
Lard	760,901,611	614,133,032	192,993,403	410,679,071	98,748,842
Neutral lard	22,957,137	20,158,530	6,735,581	19,265,813	4,846,848
Pork, canned	5,791,706	4,917,955	1,968,405	1,605,321	654,609
Pork, fresh	26,776,978	22,029,741	6,958,412	20,994,628	5,137,470
Pork, pickled	34,113,875	21,249,494	5,582,493	29,969,552	6,182,496
Sausage, canned	8,198,336	6,464,302	2,246,223	5,764,743	1,874,924
Sausage, other	13,889,285	10,298,977	4,848,183	9,813,541	3,789,677
Casings	(25,477,028)	18,850,094	5,130,576	16,053,968	4,402,062
Poultry and game .....	.....	.....	4,167,317	.....	656,012
All other canned .....	.....	.....	11,405,889	.....	5,225,611
All other .....	.....	.....	9,772,573	.....	5,207,025
Beef products	429,280,138	324,712,408	83,709,256	217,539,858	46,074,103
Pork products	2,659,726,897	2,259,987,186	717,537,326	1,108,523,450	277,422,004
Mutton products	3,009,164	2,164,931	478,929	2,906,184	619,174
Meat	3,092,015,699	2,586,864,525	801,725,511	1,327,969,442	324,115,281
Lard compounds	124,962,950	116,546,632	29,306,034	21,927,223	5,346,446
Butter	34,556,485	26,769,081	13,042,094	16,292,967	9,466,702
Cheese	14,159,721	9,996,820	3,811,833	14,037,251	4,315,417
Condensed milk	852,181,414	617,002,286	87,350,118	356,634,949	55,578,420
Total meat .....	.....	.....	861,497,900	.....	344,952,437
Total meat and dairy .....	.....	.....	966,846,925	.....	414,579,869

The quantity of meat exported during the first nine months of 1920 was only slightly more than

and dairy products combined, which were exported from January to September inclusive, was

58 per cent less than that of the value of these animal products exported during the same period of 1919.

At the same time, considerable quantities of both meat and dairy products were imported. During the nine months ended September 30, the imports of meat and dairy products imported in 1919 and 1920 are shown in the following table:

IMPORTS OF MEAT AND DAIRY PRODUCTS, 9 MONTHS ENDED SEPT. 30—			
	1919	1920	
Fresh beef and veal	28,860,827	37,335,048	
Fresh mutton and lamb	6,109,519	49,703,802	
Fresh pork	2,251,510	807,730	
Bacon and ham	2,446,509	581,101	
Bologna sausage	36,482	82,611	
All other	20,731,051	4,614,410	
Tallow	6,901,252	9,341,068	
Oleo stearin	1,819,902	853,243	
All other, free	6,005,518	2,560,283	
All other, dutiable (excluding sausage casings)	571,983	2,453,477	
Sausage casings	(8,406,783)	(9,887,400)	
Beef	37,118,463	47,611,988	
Pork	32,006,571	11,017,001	
Mutton	6,109,519	49,703,802	
Total	75,234,553	108,332,791	
Butter and substitutes	5,405,142	28,187,379	
Cheese and substitutes	4,513,855	10,693,642	
Milk and cream, gallons	2,485,003	3,232,090	
Condensed milk, pounds	13,765,808	20,254,373	

The most significant facts in this table are the increase in the amount of beef products imported, in spite of the fact that beef exports were maintained at a much higher relative figure than pork exports, and the large relative increase in the importation of lamb and mutton. The beef was mainly from Argentina, the lamb and mutton was practically all New Zealand lamb. This lamb began coming early in the year, part of it via English ports and part direct. The New Zealand lamb has a well-deserved reputation for excellence and that brought to the United States bore out its reputation. Plump, well-finished carcasses, trimmed with short shanks, proved attractive, especially when the price was observed to be much less than domestic lamb. The importations of foreign lamb, following stagnation in the wool market added to the concern of sheep raisers for the future of their business.

LIVE STOCK PRICES. The price situation in the live stock business in the United States was discouraging during 1920. The annual review of the Department of Agriculture may be summarized as follows: At the opening of the year, prices for meat animals were still close to the high levels of 1919. In beef steers, however, there was an extremely wide spread between the best and the common grades, amounting to nearly \$10. Prices on upper grades declined rapidly from February to May and the spread narrowed. Prices on all grades of steers advanced in June and from then until October 16 prices of better grades continued to improve when the average for choice and prime steers was \$17.75 per 100 pounds. Prices declined from this point until the end of the year when choice and prime steers averaged \$13, compared with \$19.25 when the year opened.

Sheep and lamb prices advanced during January, lamb prices breaking in February, all classes advancing again in March and early April. Dur-

ing the last of April lambs and sheep started on the down grade. At the end of the year medium to prime lambs were selling at an average of \$11.45 which was \$5.75 less than that at the opening of the year and \$9 less than the high point in January. Ewes and wethers declined \$8.50 and \$9.60 below the high points of April while cull sheep and common ewes hardly returned marketing costs.

The hog prices did not fluctuate so widely as those for cattle and sheep during the first eight months. Daily averages of shipper and packer purchases ranged between \$14 and \$16 until the middle of September when prices advanced until a top of \$18.25 was reached during the week of September 25. From this time the decline began, the bottom apparently being reached on December 15 with an average price of \$8.97. Prices reacted somewhat, the year closing with a weekly top price at \$10.80.

THE WOOL MARKET. If the cattle and hog producer may be said to have closed the year with reduced credit and a badly impaired bank account, the sheep raiser, especially the wool grower, was in a state closely approaching demoralization. From prices which were as high as 72 cents on the range for fine wools, the market suddenly stopped on May 20. At the close of the year, the situation was little better than six months before. A large proportion of the 1920 clip is unsold, the amount being estimated as much as 80 per cent by dealers and as much as 95 per cent by growers' representatives. Wool from farm flocks is largely pooled and in storage. Wool from range flocks is stored largely under consignment orders. Some demand for fine wool exists, a little for medium wools, and low grade coarse wools are practically unsaleable. Such a situation, with the shearing season only a few weeks away, is not a hopeful one for the wool grower, especially those who do not have good feeder lambs in prospect. Apparently the wool situation will not begin to improve until the retail outlets for clothing are again consuming normal amounts and the woolen mills again operating at full capacity.

THE PUREBRED SIRE CAMPAIGN. On Oct. 1, 1919, the Bureau of Animal Industry launched what is officially called the "Better Sires-Better Stock" campaign. The purpose of this movement is to direct attention to the need for a wider use of purebred sires on farms, to encourage farmers who own purebred stock to take greater pride in them and to spread the gospel of better blood and breeding. The cooperation of the agricultural colleges was enlisted and through them, the owners of purebred animals were enrolled in the campaign. While the actual number of owners enrolled and of animals represented is not imposing, the moral effect has been tremendous. The announcement that the campaign was planned met with instant approval from breeders and from the agricultural press. The bulletins and posters used in connection with the campaign are being widely distributed, even to foreign countries, at least one of which has used the posters after translating them into the language of the country. That the campaign is timely is shown by the reports of purebred live stock on farms now being issued by the United States Bureau of the Census. For example, in West Virginia the percentage of farms which have any kind of purebred live stock is only 8.18 per cent. The percentage in Massachusetts

is 11.09: in Michigan, 11.12; in Ohio, 13; and in New Hampshire, 13.52. The farms in the South which have purebreds are much less numerous. South Carolina has been reported thus far, with a percentage of 3.21 of her farms which have any kind of purebred live stock. Two-thirds of these are farms with purebred hogs.

With such a large number of farms without purebred live stock, the field for the "breed missionary" is an attractive one.

THE EXPORT TRADE IN PUREBRED LIVE STOCK. The export trade continues to attract interest among North American breeders. Early in the year, the National Swine Growers Association arranged through the breed associations to send a "view herd" of registered hogs to South America to be exhibited at leading live stock shows and sold at auction. Ninety head were shipped in June. They were shown at Montevideo, Uruguay, and later shipped to Buenos Aires where they were shown and sold at the great annual show of the Sociedad Rural Argentina at Palermo. The hogs shipped comprised Poland Chinas, Spotted Poland Chinas, Berkshires, Duroc Jerseys, and Chester Whites. Average prices at the sale were: Chester Whites, \$100; Spotted Poland Chinas, \$272; Berkshires, \$388; Duroc Jerseys, \$792; Poland Chinas, \$1035. The average of all was \$493—all prices being in gold.

Shipments of horses to Europe continued in a rather small way, and a shipment of Morgan horses, Southdown and Rambouillet sheep and Jersey cattle was made to Japan in June.

LIVE STOCK DISEASES. See VETERINARY MEDICINE.

LIVING, COST OF. See FOOD AND NUTRITION.

LIVONIA. One of the Baltic Provinces (q.v.); formerly a province of the Russian Empire; on the Gulf of Riga between Esthonia and Courland. Area, variously estimated at from 16,930 to 18,158 square miles; population, estimated, Jan. 1, 1915, at 1,778,500. After the war it was divided between the two new republics of Esthonia and Latvia (q.v.).

LOCKE, ROBINSON. Journalist, died, April 20. He was born at Plymouth, Ohio, March 15, 1856, and educated in Switzerland and France. He went into newspaper work in 1873 and after 1888 was president of the Toledo *Blade*. From 1883 to 1885 he was American consul at Newcastle-on-Tyne, England.

LOCKS. See CANALS; DAMS.

LOCKYER, Sir (JOSEPH) NORMAN. British astronomer, died at Sidmouth, England, August 16. His name has been celebrated among astronomers since 1868 when he and Jansson made the independent discovery that the sun's chromosphere was visible by daylight. He was born at Rugby, May 17, 1836, and received instruction from his father, who was among the first to study the new science of telegraphy. After an education in private schools and on the Continent, he was appointed in 1857 to the war office where in 1865 he became editor of the *Army Regulations*. He founded, in 1869, the weekly scientific magazine called *Nature* which promptly gained its present high position among scientific periodicals. In 1870 he was made secretary of the Duke of Devonshire's Royal Commission on Science. He began his scientific work as a pastime, but soon devoted his entire life to it. He was director of the Solar Physics Observatory, 1885-1913, and took part in eight expedi-

tions to observe eclipses of the sun between 1890 and 1905. Besides writing books on astronomy, several of which have been translated into foreign languages, he organized classes and gave lectures on the subject. His main research work was in the field of solar and stellar physics to which he contributed over 200 papers, for the most part published by the Royal Society. Two books which sum up a considerable part of his work are: *The Chemistry of the Sun* (1887), and the *Meteoritic Hypothesis* (1890). After paying several visits to Egypt, he published *The Dawn of Astronomy*, in which he attempted to decline the dates of certain Egyptian temples.

LOHENGRIIN. See MUSIC. *Opera*.

LONDON STRING QUARTET. See MUSIC, *Chamber-Music*.

LOS ANGELES, CAL. See CITY PLANNING.

LOUISIANA. POPULATION. According to the preliminary report of the census of 1920, there were 1,798,509 residents in the State, Jan. 1, 1920, as compared with 1,656,388 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 136,455, an increase of 12.4 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	1,906,000	36,595,000	\$31,106,000
	1919	1,850,000	32,875,000	48,562,000
Oats	1920	60,000	1,880,000	1,132,000
	1919	75,000	1,650,000	1,650,000
Hay	1920	320,000	542,000	8,828,000
	1919	290,000	510,000	11,870,000
Rice	1920	700,000	25,200,000	27,720,000
	1919	560,000	19,712,000	53,420,000
Potatoes	1920	27,000	1,755,000	3,563,000
	1919	25,000	1,600,000	3,520,000
Cotton	1920	1,442,000	380,000	26,980,000
	1919	1,527,000	298,000	52,094,000

* Bales. * Tons.

See AGRICULTURAL EDUCATION.

EDUCATION. The figures for "educables," six to eighteen years of age, in Louisiana, June 30, 1919, were as follows: White, 335,854; colored, 228,939. Pupils enrolled the public schools for whites 1919-20, numbered 236,301, an increase of 13,000 over the preceding session, with an average attendance of 172,636; teachers numbered 7129, of whom 6259 were women. The average salaries of teachers were \$794 for women and \$1199 for men, an increase of twenty to thirty per cent over the preceding session. In the negro schools the pupils enrolled numbered about 118,000, an increase of nearly 20,000 over the preceding session, with an average attendance of about 82,000; teachers numbered 1837 of whom 1483 were women. The average salaries of teachers in the negro schools were \$374 for women and \$369 for men. Data in regard to teachers' scholarships in 1920 were not available but in the session of 1918-19 of the teachers employed in the public schools for whites 863 were college graduates, 3113 were normal school graduates, 1365 held first grade certificates earned in examinations, 1231 second grade certificates, and 557 third grade certificates. In the ensuing year an unusual increase in the number of teachers required involved the appointment of larger numbers of low grade teachers than ever before.

ELECTIONS. The vote in the presidential election of 1920 was: Cox (Democrat), 87,354;

Harding (Republican), 38,538; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 79,875; Hughes (Republican), 6466. Progressive, 6349.

OFFICERS. Governor, John M. Parker; Lieutenant-Governor, Hewitt Bouanchaud; Secretary of State, James J. Bailey; Treasurer, Howell Morgan; Auditor, Paul Capdevielle; Attorney-General, A. V. Coco.

LOWER AUSTRIA. Before the downfall of the Austro-Hungarian Empire, a crownland of Austria. Area, 7654 square miles; population, Dec. 31, 1910, 3,531,814 of whom 3,130,536 were German-speaking. Capital Vienna. See AUSTRIA.

LOWRY, Sir ALBERT SWINBURNE. British admiral, died, May 29. He was born at Zante, Mar. 4, 1854, and entered the navy in 1867. He received the Royal Humane Society's bronze medal for saving life in 1873 and the thanks of the French government for the rescue of a corvette at Jaffa, in 1892. He was in the intelligence service from 1897 to 1900 and became rear-admiral in the Channel fleet in 1907 and admiral in 1913. He was the admiral commanding in Scotland in 1913-16 and commander-in-chief at Rosyth in 1916. He retired in the following year.

LUDWIG, DUKE OF BAVARIA. Senior member of the House of Wittelsbach, died at Basle, Switzerland, November 10. Duke Ludwig was a brother of the late Empress Elizabeth of Austria. He was born in Munich, June 21, 1831; served in the Bavarian cavalry; and was made a general in 1859, when he renounced his rights to the throne in order to marrymorganatically an actress. At the death of this wife, he contracted a second morganatic marriage with a Munich ballet dancer, from whom he was divorced at Munich in 1913. He was not on good terms with his family and was often in financial difficulties.

LUMBERING. See **FORESTRY.**

LUTHERANS. The Lutherans in the United States are divided under three general heads. The first, the National Lutheran Council, is an association of the United Lutheran Church in America, the Evangelical Lutheran Joint Synod of Ohio and other States, the Evangelical Lutheran Synod of Iowa and other States, the Lutheran Synod of Buffalo, the Immanuel Synod of the Evangelical Luthtran Church in North America, continue the work of the National Lutheran Evangelical Lutheran Augustana Synod of North America, the Norwegian Lutheran Church of America, the Lutheran Free Church, the Evangelical Lutheran Church of America (Eielsen's Synod), the Church of the Lutheran Brethren, the United Danish Evangelical Lutheran Church in America, the Icelandic Lutheran Synod of America, the Finnish Evangelical Lutheran Church of America (Suomi Synod), the Finnish Evangelical Lutheran National Church of America, and the Finnish Apostolic Lutheran Church of America. The second division is known as the Evangelical Lutheran Synodical Conference of North America, and contains: the Evangelical Lutheran Synod of Missouri, Ohio, and other States, the Evangelical Lutheran Joint Synod of Wisconsin, Minnesota, Michigan, and other States, the Slovak Evangelical Lutheran Synod of America, the Norwegian Synod of American Evangelical Lutheran Church, and the Negro Mission. The third division is composed of in-

dependent congregations. There were in the United States and Canada in 1920, 3,753,805 baptized members, 2,493,894 confirmed members, 10,061 ministers, and 14,955 congregations. These congregations reported a total church property valuation of \$187,231,000, a total benevolent expenditure of \$10,762,208. It is estimated that the Lutheran members enrolled and un-enrolled in America are 15,000,000. Preaching is conducted in the United States in 17 different languages.

During the war the National Lutheran Commission for Soldiers' and Sailors' Welfare did much work with the American forces here and abroad. As an outcome of this work, in the fall of 1919, the National Lutheran Council appealed to the Lutheran Church in America for clothing to forward to the needy in Poland and other parts of Europe. The response was more than 2,000,000 pounds of clothing and \$279,327.40. On Jan. 1, 1921, a new appeal was made to the Lutheran Church for \$1,250,000 to continue the work of the National Lutheran Council during the year 1921, and another appeal for additional clothing for relief work purposes. The Council maintains relief organizations in the countries of Poland, Latvia, Esthonia, Finland, Germany, Czechoslovakia, Jugo-Slavia, Austria, Hungary, Roumania, Italy, France, and other European countries.

The various branches maintain a large number of educational institutions in all parts of the country. In 1919 there were 24 theological seminaries, 39 colleges, seven ladies' colleges and seminaries, 52 academies, five normal schools, nine Bible schools. The Inner Mission work may be summed up as follows: 62 orphans' homes, 48 homes for the aged. Also there were nine deaconess motherhouses, 47 hospitals, 13 hospices, seven homes for defectives, eight immigrant and seamen's missions, and 11 miscellaneous institutions. There are 14 Inner Mission Societies and City Missions.

Both foreign and home missions are maintained. There are 12 American societies for missionary work in India, China, Persia, Turkey, Japan, Africa, Madagascar, South America, Australia, New Guinea, Virgin Islands, West Indies, Philippine Islands, and among the American Indians and Esquimaux. In 1919 there were 394 missionaries, 2648 native helpers, 123,927 native Christians, 14,214 candidates for baptism, 42,415 pupils in mission schools, and a total income of \$696,362. Total reported contributions for benevolences in this country for 1920, were \$10,762,208. There are 36 European missionary societies operating in many more fields. There were in 1919, 2355 missionaries, 12,014 native helpers, 964,580 native Christians, 68,190 candidates for baptism, 230,500 pupils in mission schools, and a total income of \$3,308,500. Contributions for this work ran into very large figures. The church maintains 35 publishing houses in various parts of the country, which publish 312 periodicals, a large number being in foreign languages. For further information on the Lutheran church in general, see the *Lutheran World Almanac and Annual Encyclopedia*. The national headquarters of the denomination are at 437 Fifth Ave., New York City.

The following figures are for 1920 for the three divisions of the church:

National Lutheran Council: 6634 ministers

in America, 11,037 congregations, 2,459,392 baptized members, 1,651,609 confirmed members, 7090 Sunday schools, 82,894 teachers, and 798,672 scholars. Evangelical Lutheran Synodical Conference of North America: 3415 ministers in America, 3905 congregations, 1,298,213 baptized members, 839,685 confirmed members, 2151 Sunday schools, 11,407 teachers, and 216,358 scholars.

Independent Congregations: 12 ministers in America, 13 congregations, 5200 baptized members, 2600 confirmed members, two Sunday schools, 30 teachers, and 605 scholars.

LUXEMBURG. A small state of central Europe, bounded by Germany, Belgium, and France; neutralized by the Treaty of London, 1867; occupied by the Germans during the late war; restored to independence after the armistice in 1918. Area, 998 square miles; pop., Dec. 1, 1916, 263,824. Capital, Luxembourg, with a population of 20,355 in 1916. In 1918 the country produced iron to the amount 1,266,671 tons valued at 254,590,396 francs; and steel to the amount of 857,937 tons valued at 199,573,800 francs. The revenue, 1919-20, including the loan of 90,000,000 francs, was 126,018,256 francs; expenditure including deficits of previous years, 170,547,229 francs. Railways in 1918 had a mileage of 330. Luxembourg is a grand duchy, the ruling grand duchess in 1920 being Charlotte Adelgonde (born, Jan. 23, 1896; succeeded to the throne Jan. 9, 1919). The legislative power is in a chamber of deputies of 48 members elected for six years. The chamber elected in October, 1919 was distributed among the political groups as follows: Catholics 22; Dissenting Catholics, 4; Socialists, 13; Independent Socialists, 2; Liberals, 7. The referendum taken, Sept. 28, 1919, to decide on the political and economical future of the country resulted as follows: Votes for the reigning grand duchess 66,811; for the continuance of the dynasty under another grand duchess, 1286; for a republic 16,885; for economic union with France, 160,135; for economic union with Belgium, 22,242. Total number of voters, 90,984.

LYALL, Sir CHARLES JAMES. British Orientalist and civil servant, died in London in September. He was born, March 9, 1845, and educated at Kings College, London, and at Oxford; joined the Indian civil service in 1867 and became under-secretary to the Central government in the revenue and Agricultural Department. In 1880 he was secretary to the chief commissioner at Assam and later was commissioner of the Valley Districts. From 1889 till his retirement in 1910 he served as secretary in the Home, Judicial, and other departments of the Indian service. Aside from his official activities he devoted his life to the study of Hindustani and Arabic literature and his writings and translations are widely known to the Orientalists. He was an active member and vice-president of the Royal Asiatic Society. Among his works may be mentioned: *Translations of Ancient Arabic Poetry* (1885); an edition of *Ten Ancient Arabic Poems*; articles in the *Encyclopedia Britannica*; and an edition of two ancient Arabic *dirans* with translations (1913).

LYDECKER, CHARLES EDWARD. Lawyer, died, May 6. He was born in New York City, May 26, 1851; graduated at the College of the City of New York in 1871; and in law at Columbia in 1873. He was engaged for many years in corporation work, will contests, ad-

ministration of estates, etc., and interested himself in the State military service. He was a member of the council of the United States Military Service Institute after 1903, and he was a founder of the National Security League and the chairman of its committee on militia.

LYMAN, BENJAMIN SMITH. Geologist, died, August 30. He was born at Northampton Mass., Dec. 11, 1835; graduated at Harvard in 1855 and subsequently studied in France and Germany. In 1870 he was engaged in mining and engineering under the Indian government and from 1873 to 1879 was chief geologist and mine engineer to the Japanese government. His geological researches extended over many parts of the United States, and the Far East. He was the author of more than 150 papers, reports, etc. on geological and mining subjects.

LYNCHING. The following report in regard to lynchings in 1920 was compiled by Monroe N. Work, of the Department of Records and Research of the Tuskegee Institute: There were 56 instances in which officers of the law prevented lynchings. Of these, 10 were in Northern States and 46 were in Southern States. In 42 of the cases, the prisoners were removed or the guards were augmented or other precautions taken. In 14 instances armed force was used to repel the would-be lynchers. In four of these instances the mobs were fired upon and as a result, seven of the attackers were killed and several wounded.

There were 61 persons lynched in 1920. Of these, 52 were in the South and nine in the North and West. This is 22 less than the number, 83, for the year 1919. Of those lynched 53 were negroes and eight were whites. One of those put to death was a negro woman. Eighteen, or less than one-third of those put to death, were charged with rape or attempted rape. Three of the victims were burned to death. The charges against those burned to death were: rape and murder, one; killing landlord in a dispute, two.

The offenses charged against the whites were: murder, 5; insulting woman, 1; no charge except being a foreigner, 1; killing officer of the law, 1. The offenses charged against the negroes were murder, 5; attempted murder, 4; killing officer of the law, 5; killing landlord in dispute, 6; rape, 15; attempted rape, 3; assisting fugitive to escape, 3; wounding another, 2; insulting woman, 2; knocking down guard, escaping from chain gang and then returning and surrendering, 2; jumping labor contract, 1; threatening to kill man, 1; cutting a man in a fight, 1; for receiving stay of death sentence because another confessed crime, 1; peeping through window at woman, 1; insisting on voting, 1.

The States in which lynchings occurred and the number in each State are as follows: Alabama, 7; Arkansas, 1; California, 3; Florida, 7; Georgia, 9; Illinois, 1; Kansas, 1; Kentucky, 1; Minnesota, 3; Mississippi, 7; Missouri, 1; North Carolina, 3; Ohio, 1; Oklahoma, 3; South Carolina, 1; Texas, 10; Virginia, 1; West Virginia, 1.

LYON, EDMUND. Philanthropist, died, April 24. He graduated at the University of Rochester and studied law at Columbia, where he took his degree in 1880. After practicing for a short time he became interested in real estate and mining and was manager and director of the North East Electric Company, Rochester, and a director of the Lincoln National Bank. After 1890, he de-

voted himself to writing and lecturing on the teaching of the deaf and was subsequently active in that and other works of welfare. He was the author of *The Lyon Phonetic Manual* (1891).

LYON, LEROY SPRINGS. Army officer, died, February 23. He was born at Petersburg, Va., Oct. 15, 1866, and graduated at Richmond College in 1886 and at the United States Military Academy in 1891. He was transferred from the cavalry to the artillery and on June 13, 1911, became inspector-general. He was made brigadier-general of the National Army, Aug. 5, 1917, and major-general, April 12, 1918. He served in Cuba in 1899-1900 and against the Moros in the Philippines, 1906-7; in the Canal Zone, 1916-17; and in France in 1918-19, where he participated in the Meuse-Argonne offensive. On July 26, 1919, he was placed in command of the field artillery school at Camp Taylor, Kentucky.

LYSTER, CECIL RUPERT CHATWORTH. British surgeon and X-ray specialist, died, Jan. 26. He was born, Dec. 14, 1859, and travelled in the United States and Europe. He was medical superintendent of the Bolingbroke Hospital from 1885 to 1903 and made a special study of electro-therapeutics. He wrote the *Treatment of Disease by Different Forms of Rays*.

MACALPINE, Sir GEORGE WATSON. British coal-owner, died April 18. He was born at Paisley, England, in 1850; educated in schools there and was chairman of several great coal and brick companies and prominent in Baptist circles, being the chairman of the committee of the Baptist Missionary Society and former president of the Baptist Union. He wrote the *Days of the Son of Man*.

MACAO. A province belonging to Portugal, consisting of the island of Macao at the mouth of the Canton River and the two small adjacent islands of Taipa and Colôane. The city of Macao, situated on the island of the same name, is divided into two parts, inhabited by Chinese and non-Chinese respectively, and under separate administrations. Population, Dec. 31, 1910, 74,866, of whom the Portuguese numbered 2171 and the Chinese 71,021.

MACDONALD, Sir DONALD ALEXANDER. Canadian general, died May 3. After 1904 he was quartermaster-general of the Canadian militia. He was born Oct. 31, 1845, and joined a rifle company in 1863. He served during the Fenian raids in 1866; in the Red River expedition, 1870, where he won a medal; and in the Northwestern rebellion in 1885, where he also received a medal. He held for a time the office of chief superintendent of military stores and in 1903-04 was director-general of ordnance.

MACDONALD, WALTER. British theologian, died, May 2. He was born in Ireland, in 1854 and educated at St. Patrick's College, Maynooth. Having been ordained priest in 1876, he taught philosophy, theology, and English literature at St. Kieran's College for five years and was then made professor of theology at St. Patrick's, Maynooth (1881). In 1906 he founded the *Irish Theological Quarterly* which he edited for three years. His writings included, *Motion: Its Origin and Conservation*, which was condemned by the Index and withdrawn from circulation; *The Principles of Moral Science*; and many papers on literature, theological, and philosophical subjects for the *Catholic Review*.

MACEDONIA. A region of southeastern

Europe, nearly corresponding to the former vilayet of Saloniki in the Turkish Empire, lying to the west and south of the Rhodope Mountains, with its southeastern part bordering on the Aegean; after the Balkan wars partitioned among Greece, Serbia, and Bulgaria, Greece receiving the largest part. The departments controlled by Greece are Saloniki, Serres, Drama, Cozani, and Florina, with a total population of 1,194,002, according to the provisional census of 1913.

MACKENZIE, KENNETH ALEXANDER J. Surgeon, died at Portland, Ore., March 16. He was dean of the medical department of the University of Oregon and enjoyed a national reputation. He was born in Manitoba, Canada, Jan. 13, 1859. He studied in Scotland, then at Montreal and Toronto, and finally in London, Edinburgh, and in the universities of the Continent. He went into the practice of medicine at Portland, Ore., in 1882 and was from 1887 to 1907 professor of the theory and practice of medicine, and afterwards professor of operative and clinical surgery at the University of Oregon, holding the latter chair until the time of his death. He was the chief surgeon in the Oregon and Washington Railway and Navigation Company after 1895, the director and medical director of the Lewis and Clark expedition, and the holder of other important posts. He was the head of the relief corps of physicians and nurses in San Francisco in 1906 and he organized and took charge of the Harbor View Relief Station under the United States military authorities.

MACKIE, CHARLES H. See PAINTING AND SCULPTURE.

MACKINNON, ALAN. British founder of the Oxford University Dramatic Society, died at the beginning of April. He was born in 1861. During his student days at Oxford he interested himself in amateur theatricals and succeeded along with others in founding the Oxford Dramatic Society in spite of the strong prejudice against it. He has left an account of it in a book entitled *The Oxford Amateurs*.

MACLAURIN, RICHARD COCKBURN. Educator, died, January 15. From 1909 to the time of his death he was president of the Massachusetts Institute of Technology. He was born at Lindean, Scotland, June 5, 1870, and educated in New Zealand and at Cambridge, England, where he graduated with honors in 1897. He was professor of mathematics at St. John's College, Cambridge, 1898-1905, and then after serving several years in the University of New Zealand was elected professor of mathematical physics at Columbia University. He was a student of law as well as of physics and wrote on both subjects. Among his works may be mentioned *Title to Realty* (1900); *Lectures on Literature* (1909); he was also author of various scientific memoirs published by scientific bodies and in the scientific reviews.

MACLEAN, HARRY AUBREY DE, known as KAID, Sir HARRY MACLEAN. British military officer, celebrated as the captive of the Arab chief, Raisuli, died at Tangier, February 4. He was born in 1848, entered the military service and served at Gibraltar. In the course of a visit to Tangier he received the offer of the post of instructor to the Moroccan army with which he served for about 30 years. He was celebrated for his daring and as an excellent shot and many stories are told of his adventures. On July 1, 1907, he was kidnapped by the bandit Raisuli and

all attempts at rescue failed. The British Legation finally obtained his release by the payment of a ransom of £20,000. During his captivity Mulai Hafid became Sultan and during the succeeding period of French control, Maclean's association with Morocco ceased.

MACLEOD, ANGUS. British admiral, died, April 29. He was born June 11, 1847, and entered the navy in 1860. He served on the Gold Coast in 1874 and received the Ashantee medal. He was aide-de-camp to Queen Victoria and King Edward, 1899-1901; director of naval ordnance; senior officer on the coast of Ireland, 1904-06; and retired in 1910.

MACLEOD, SIR EZEKIEL. Canadian jurist, died June 11. He was born in New Brunswick, Oct. 29, 1840; was educated in the schools of New Brunswick and at Harvard College; and was called to the bar in 1868. From 1914 to the time of his death he was Chief Justice of the Supreme Court of New Brunswick. He was a member of the provincial Legislature, 1882-86, a member of the Canadian House of Commons, 1891-96, and a senator of the University of New Brunswick.

MACLOSKE, GEORGE. Biologist, died, January 4. He was born in Castledown, Ireland, in 1834, studied at Queen's University, Ireland, and at the University of London, graduating with honors. He was a pastor for 13 years in Ireland, meanwhile pursuing studies in natural history. He was called to the chair of natural history in Princeton University, N. J., and served the college for 31 years, retiring in 1906 as professor emeritus. Although a theologian, he was in sympathy with new biological theories and a believer in the harmony between science and religion, writing frequently on that subject. Through his wide readings he kept abreast of the progress of science and at the same time pursued interests in many different fields especially in that of modern languages. He was one of the early promoters of the Esperanto movement in the United States. Besides writing many monographs for the learned periodicals he published *Elementary Botany with Student's Guide to the Examination of Plants* (1883).

MACMAHON, JOHN EUGENE. Army officer, died, January 30. He was born at Buffalo, N. Y., Dec. 8, 1860; educated at Fordham University, and graduated at the United States Military Academy in 1886. He served during the war with Spain, being adjutant general in the fifth army corps and adjutant-general of the forces at Puerto Principe, 1898-99; and he was in the Philippines in 1901. Just before the late war he was on duty with the general staff, 1911-14, and in September, 1917, he was placed in command of the 160th field artillery brigade at Camp Custer.

MACCOUN, JAMES MELVILLE. Canadian naturalist, died, January 8. At the time of his death he was chief of the biological division of the Canadian Geological Survey, and he was also generally regarded among the best informed systematic botanists of his day. He was born in Belleville, Ontario, Nov. 7, 1862, educated at Albert University there, and became assistant botanist and naturalist to the Geological Survey of Canada in 1883. He remained in the service of the Geological Survey until his death, specializing from the first in botany. In 1917 he was appointed botanist of the Survey and in 1918 chief of the botanical division. He

was also celebrated as an expert in the fur seal industry and took part in the expeditions of the Pacific Islands in 1892-93, and also in the subsequent measures for the arbitration of the fur seal question. He made expeditions into the Behring Sea in 1896-1914 and meanwhile had taken part in many other expeditions including a visit to the west coast of Hudson Bay for the purpose of studying the flora and fauna. He there narrowly escaped with his life from a wreck of the vessel, finding his way to the shore in a small boat and journeying thence overland to Lake Winnipeg on foot in the winter. To him and his father were due the collection in the National Herbarium comprising more than 100,000 specimens of Canadian flora and also the collection of 6000 or 7000 ornithological specimens in the museum. He was active in the affairs of his city and province and in Dominion politics and contributed largely to the improvement of the civil service.

MACSWINEY, TERENCE. Lord Mayor of Cork, Irish hunger striker, died at Brixton jail, London, England, as a result of voluntary starvation, October 25. His hunger strike, undertaken as a protest against a sentence to two years' imprisonment, had lasted 74 days, during which it was a subject of newspaper comment all over the world. He was born March 27, 1879, son of a Cork manufacturer of tobacco and snuff; he was educated in the Christian Brothers' School at Cork; and studied later at the Royal University in Dublin, where he took several degrees. He was a diligent student and fond of books, his favorite readings being in Irish history, and he was from the first an intense partisan of the native Irish movement, always employing the native Irish tongue when circumstances permitted. For 16 years he served as an accountant in a warehouse establishment. In his spare time he attended meetings and addressed his fellow Irishmen on national topics. He threw himself into the Sinn Féin as soon as it began and from the moment when the so-called Irish Republic was proclaimed he ceased to regard himself as a subject of the King. He edited a number of small journals in the revolutionary interest, which were suppressed, and he was one of the leaders in the Easter rebellion. Before that rebellion broke out, however, he was arrested. After the rebellion, he was chief of the Cork volunteers. Meanwhile he had been elected alderman of the corporation of Cork and was later chosen Lord Mayor of that city to succeed McCurtain who had been killed. He was arrested August 12th on charges under the Defense of the Realm Act and immediately began a hunger strike. He was taken to Cork jail and guarded by the military and in the trial was accused of having a cipher corresponding to that which had been issued to the Royal Irish constabulary and of having also the copy of a resolution and the notes of a speech, both of which indicated seditious activities. He was sentenced on August 17th to two years' imprisonment and was deported to England on board a torpedo boat destroyer and placed in Brixton jail. On hearing his sentence he said that he intended to put a limit to any term of imprisonment that might be imposed and that he had been without food since August 12th. The cipher mentioned above was that in which messages had been sent resulting in the decoying of policemen into ambush where they were murdered. Many appeals were made

for his release to the Prime Minister or the King, but these were refused. The Prime Minister declared that a law which was a respecter of persons was no law and that if the cabinet departed from its decision, the whole machinery of government in Ireland would break down. The subject attracted the widest interest in the United States, where the Secretary of State was approached by the Irish element and requested to intercede on behalf of MacSwiney with the British government: and a strike was called in New York and other ports for the purpose of tying up British shipping. There was much discussion over the question whether, from the point of view of the Roman Catholic Church, suicide resulting from hunger striking was a crime and whether the sacraments could be administered in such cases and it was said in a dispatch from Rome on October 17th, that the Pope had referred the question to the Congregation of the Holy Office. The intense Irish sympathies of the Irish element in America caused the death of MacSwiney to be denounced widely as a murder. Prominent Irish city officials in the United States referred to him as one of the noblest martyrs in history. The Irish leader, De Valera, made it the occasion for an appeal for American support and for further denunciation of the British government. At the time of his death only his brother and his private chaplain were with him, though his wife and two sisters were in a hotel nearby. In general, the British public showed courtesy and even sympathy toward the relatives of the prisoner. In the British press there was much comment to the effect that the government ought to have avoided this outcome.

MADAGASCAR. The large island lying off the southeastern coast of Africa, from which it is separated by the Mozambique Channel. The shortest distance to the continent is 240 miles. The length of the island is 980 miles and its greatest breadth 300. It became a French possession in January, 1896, and along with its dependencies was constituted a French colony in August of that year. Its dependencies consist of a number of small islands, namely: Diégo-Suarez, Nossi Bé, and the Saint Marie, Mayotte, and Comoro groups. Capital, Antananarivo. Area, estimated at 228,000 square miles. Population, Jan. 1, 1918, 3,545,264, of whom 15,157 were French, and 3101 other Europeans. The population is composed of numerous Malagasy tribes, of which the chief is the Hova, numbering 1,097,458, whose language prevails throughout the island. The population of Antananarivo is placed at 63,115. The next largest towns are Famatave, the principal port, with about 15,000 inhabitants, and Diégo-Suarez, with 10,388. No later statistics for schools were available than those given in the preceding YEAR BOOK, which showed 745 official schools with 76,243 pupils, Jan. 1, 1918. The chief occupations are cattle-breeding and agriculture and the chief crop is rice. Gold is found in commercial quantities, and there are deposits of iron, copper, lead, zinc, sulphur, silver, coal, and other minerals. The industries include silk manufacture and cotton-weaving, metal-working, and the making of straw hats. Imports (1918), £4,090,792; exports, £3,671,308. The leading imports were clothing, cotton, and metals. The leading exports, hides, rice, and rafia fibre. By far the greater part of the trade is with France and the French colonies.

Next in importance is the trade with the British possessions. In 1918 the imports from France amounted to £1,763,021 and the exports to £2,441,369. The main sources of local revenues have been direct taxation, customs, etc. On June 30, 1919, the railway mileage was 776. In 1918 the vessels entered had a tonnage of 630,320 and those cleared had a tonnage of 632,133; of the total tonnage, 490,563 was French. The colony is under a governor-general who acts by the advice of a consultative council. The governor-general in 1920 was M. Garbit, appointed, March 14.

In recent years the discovery of rich deposits of radium-containing minerals were reported. In 1920 it was said that the undeveloped resources were richer than in any field elsewhere exploited.

MADAME CHRYSANTHEME. See MUSIC, Opera.

MADELEINE, PAUL. See PAINTING AND SCULPTURE.

MADISON, WIS. See MUNICIPAL OWNERSHIP.

MADRAZO, Don RAIMUNDO. Spanish painter, died in Paris, September 15. One of the most celebrated members of a Spanish family of painters, and known as one of the greatest portrait painters in Spain. He was born in Rome July 24, 1841, and studied under Cogniet and at the Beaux Arts at Paris. Some of the best examples of his portraits are those of the queen regent of Spain and various members of prominent families in New York City. The portraits are remarkable for brilliancy of execution, grace, and finish. His genre paintings also have these qualities and include: "The End of a Masked Ball," "Fête During Carnival," "A Lady with a Parrot," "Pierrette," etc.

MAGNESITE. The production of magnesite in the United States in 1920 increased 94 per cent in quantity over that of 1919. The entire output was made by two States, California and Washington. California mined 63 per cent more magnesite in 1920 than in 1919 and more than eight times as much as it mined seven years ago. Washington increased its production 109 per cent over that of the preceding year, making by far the largest output it has yet made. According to the United States Geological Survey, Department of the Interior, the total production of magnesite in the United States in 1920 was 303,767 short tons, which was valued at approximately \$2,748,150. The imports of magnesite in 1920, reported by the Bureau of Foreign and Domestic Commerce as calcined, not purified, amounted to 43,154 long tons, valued at \$780,078. Although the quantity of magnesite imported in 1920 was nearly three times as great as in 1919, it was only about one-seventh of the quantity commonly imported before the war.

MAGOON, CHARLES E. Former governor of the Canal Zone, died January 14. He was born in Steel County, Minn., Dec. 5, 1861; educated at the University of Nebraska; studied law, and was admitted to the bar in 1882. From 1882 to 1889 he practiced at Lincoln, Neb., and then became a law officer of the Bureau of Insular Affairs in the War Department, 1899-1904. In 1904-05, he was the general counsel of the Isthmian Canal Commission, and from May 25, 1905, to Oct. 12, 1906, he was the Governor of the Canal Zone. During his term of office he served also as minister to Panama, and on Oct. 12, 1906, became the provisional governor of Cuba, hold-

ing that office to Jan. 28, 1908. In politics he was a Republican. He was the author of a work entitled *The Law of Civil Government Under Military Occupation* (1902).

MAGRE, MAURICE. See FRENCH LITERATURE.

MAIL, AERIAL. See AERONAUTICS.

MAIL BY AIRPLANE. See AERONAUTICS.

MAINE. POPULATION. According to the preliminary report of the census of 1920, there were 768,014 residents in the State, Jan. 1, 1920, as compared with 742,371 in 1910.

AGRICULTURE. According to the census of 1920 the number of farms was 48,228, a falling off of 19.6 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produce, Bu.	Value
Corn	1920	5,000	226,000	\$289,000
	1919	5,000	300,000	585,000
Oats	1920	119,000	4,974,000	4,228,000
	1919	115,000	3,910,000	3,597,000
Wheat	1920	7,000	159,000	366,000
	1919	8,000	150,000	330,000
Hay	1920	1,192,000	*1,215,000	29,779,000
	1919	1,185,000	*1,534,000	28,670,000
Potatoes	1920	123,000	22,140,000	27,675,000
	1919	106,000	25,440,000	35,616,000

* Tons.

CHARITIES AND CORRECTIONS. There are State hospitals at Augusta and Bangor; tuberculosis sanitariums at Hebron and Fairfield; a State school for boys at South Portland and for girls at Hollowell; a school for feeble-minded at Pownal (West); State reformatory for women at Skowhegan; State prison at Thomaston; military and naval orphan asylum at Bath.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 138,355; Cox (Democrat), 58,961; Debs (Socialist), 2214; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 69,506; Wilson (Democrat), 64,188; Benson (Socialist), 3177. The vote for governor in 1920 was: Parkhurst (Republican), 135,353; McIntyre (Democrat), 70,237.

OFFICERS. Governor, Carl E. Milliken; Secretary of State, Frank W. Ball; Treasurer, Joseph W. Simpson; Attorney-General, Guy H. Sturgis; Superintendent Public Schools, A. O. Thomas; Adjutant-General, George McL. Presson.

JUDICIARY. Supreme Court: Chief Justice, Leslie E. Cornish; Associate Justices, George M. Hanson, Warren C. Philbrook, Albert M. Spear, Charles J. Dunn, John A. Merrill, Scott Wilson Luere B. Deasy.

MAINE, UNIVERSITY OF. A co-educational, non-sectarian State institution, at Orono, Me., founded in 1862. In 1920 there were 1461 students enrolled. The faculty numbered 105. The income amounted to \$1,572,000. In the library there were 60,000 volumes. President, Robert Judson Aley, LL.D.

MAINE FESTIVAL. See MUSIC, *Festivals*.

MAIR, WILLIAM. Scottish minister and church historian, died, January 27. He was born at Savoch, Scotland, in 1830, and educated at the University of Aberdeen. After serving many years as a parish minister, he became Moderator of the Church of Scotland in 1897. He published many works relating to the laws and history of the Scottish churches including a digest of laws and decisions which passed through its fourth edition in 1911; *Speaking*, which

passed through its fourth edition in 1908; *The Truth about the Church of Scotland* (1891); and a large number of special monographs on the Scottish churches. In 1911 he published his autobiography.

MAIZE. See CORN.

MALACCA. One of the Straits Settlements (q.v.).

MALARIA. For the status of malaria in the United States the reader is referred to the YEAR BOOK for 1919. In regard to malaria as a world scourge, the experience of the late World War has taught that of all the plagues which visit mankind malaria is perhaps the worst. Our former knowledge of tropical malaria has been enhanced and the old truths that the disease in these areas is a much more serious affair than malaria as it occurs in temperate zones, have been visualized anew. There are types of malaria which do not yield to quinine and which are diffused by insects other than the *anopheles* mosquito. In an editorial on the "Problem of Malaria" in the *Medical Record* for Dec. 11, 1920, attention is called to the extremely wide diffusion of this affection; to the fact that it may be very rapidly diffused from an old to a new focus; and to the existence of types which are quinine-resistant. Failure of the latter medicament in the United States would justly be imputed to defective technic. In Salonika where the disease flourished during the war the climate was less a factor than the number of troops assembled there. The region is easily accessible from Egypt and Syria. In addition many soldiers were stationed in the latter countries and despite prophylaxis with quinine not over 20 per cent are said to have escaped. On the Salonikan front 90 per cent of the troops are said to have had the disease. Sanitary experts have obtained the impression that the future of the British Eastern Empire may come to depend on the success in antagonizing malaria. Without reference to tropical types the mere fact of an entire vast army stricken with the disease appears to intensify the infection to the point that the action of quinine while specific, is defective. It was learned that *culex* mosquitoes and day-flying insects can give the disease as well as the night-flying *anopheles*.

MALAY STATES. See FEDERATED MALAY STATES.

MALLINGER, MATHILDE. Hungarian dramatic singer, died at Berlin, April 19. She was born at Aram in Hungary in 1847 and studied at Prague and Vienna. She made her first appearance in Munich as Norma and drew the attention of Wagner by the remarkable quality of her voice and by her dramatic ability. As a result, she became the original interpreter of Eva in *Die Meistersinger* (1868). She was one of the leading singers of the Royal Opera in Berlin until 1882, when she retired from the stage. She taught singing at the Prague Conservatory 1890-1905, and after that at the Lichberg Conservatory in Berlin. In 1869 she was married to Baron Schimmelpennig.

MALONE, JAMES THOMAS. Judge, died in New York City, December 2. He was born at Norwich, Conn., Jan. 9, 1865; studied at Phillips Exeter Academy, and graduated at Harvard, in 1889. After studying law, he was admitted to the New York bar in 1891 and practiced in New York City, where he was corporation counsel from 1894 to 1908 and judge of the Court of General Sessions for the term 1918-22. He was nomi-

nated by Tammany Hall to the last-named office, but afterwards broke off relations with that organization. He was held in high esteem by the profession and the public generally. In 1919 he attracted much attention by his efforts to expedite the trial of cases in the courts, declaring that 1267 bail cases had remained untried, though some of the indictments were six years old.

MALTA. An island and naval base in the Mediterranean Sea, constituting along with the islands of Gozo and Comino, a British crown colony, important for its harbor, which is one of the finest in the world. It is a port of call, headquarters of the British Mediterranean fleet, and strongly fortified and garrisoned. Total area, 118 square miles; the area of Malta itself being 91½ square miles. Civil population, April 2, 1911, 211,868; estimated, April 1, 1919, 224,655. The chief town and port is Valetta. In 1918-19 there were 142 public schools, with 22,331 pupils; a university with 139 students; a Lyceum, two secondary, and seven technical manual schools. Acreage under cultivation, 1918-19, 43,117; chief products, vegetables and fruits. The chief occupation is farming. Imports and exports (1918-19) respectively amounted to £2,863,920 and £779,925. During the first three quarters of 1920 there was a considerable increase in the foreign trade, especially in coal and fuel oil, for the merchant shipping, the coal coming from England and the fuel oil from the United States. Tonnage (exclusive of transports) entered in 1918-19 amounted to 692,643 (503,271 British); cleared, 688,118. Governor in 1920, Field Marshal Lord Plummer.

MANCHURIA. The region belonging to China between the Province of Chihli and the Amur River, which separates it from Siberia, extending eastward from Hingan Mountains to Korea, and constituting the three Chinese provinces of Fengtien, Heilongchuang, and Kirin. Estimated area, 363,310 square miles; estimates of population vary from about 6,000,000 to about 29,400,000 but a 1920 estimate placed it at about 19,000,000, of which 90 per cent were Chinese. The chief seaport is Dairen which is a port of call for steamers bound for Europe and America. The next seaport in importance is Newchwang, whose trade is confined chiefly to the ports of Japan and China. Another important centre is Harbin, which is connected with Vladivostok, Dairen, and Tientsin by railway. The city of Antung is also an important port for the transshipment of Japanese-borne goods. The following information in respect to production, trade, etc., was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920:

Manchuria is primarily an agricultural country, and owes recent economic development chiefly to agricultural products. It is rich in great, level, fertile plains, adapted for agriculture on an extensive system. The total area of arable land is roughly estimated at 20,000,000 acres. The cultivated area in South Manchuria is estimated at 5,000,000 acres, and the number of people engaged in farming as close to 2,700,000. About 90 per cent of the cultivated land is taken up by soya beans, wheat, millet, and kaoliang (tail millet), these four being cropped in rotation. In all Manchuria nearly 4,900,000 acres are devoted to cultivation of beans, with an annual production of 100,000,000 bushels. About 70 per cent of this production is exported either in original form or in oil or bean cake, annual ship-

ments being estimated at 1,000,000 tons for beans and bean cake and 120,000 tons for bean oil. Soya beans and their by-products constitute about 75 per cent of the export values of the country. Kaoliang is used as a foodstuff and for brewing native spirits. Its estimated annual production is 165,000,000 bushels, with a normal brewery product valued at more than \$7,500,000. Millet is also a staple food product, especially in North Manchuria. Maize is grown chiefly in South-eastern Manchuria, where it takes the place of kaoliang and millet as a food product. Wheat is grown abundantly in North Manchuria, and many flour mills are found in and about Harbin. The sugar beet is cultivated to a small extent; but it is well adapted to Manchurian soil and has a promising future.

Manchuria is rich in lands easily convertible into good grazing ground, but stock farming is conducted only on a small scale. Recent statistics give the number of cattle as 1,000,000, horses about twice that number, and sheep 600,000. As elsewhere in China, only pigs are numerous, being raised by most Chinese households and totaling more than 5,000,000.

A large part of South Manchuria is level and destitute of trees, but in the basin of the Yalu the forest area is estimated at 715 square miles and in its tributary (Hun) basin at 480 square miles, the trees being mostly pine and cypress. In North Manchuria nearly half the region is covered with forests, those along the Changpai and Hsingan Mountains being particularly rich. Forests convenient to transportation have been sadly depleted, but those in remote regions are as flourishing as ever. Chinese authorities have been utterly neglectful in afforestation work, but Japanese authorities in the Kwantung territory and other places have done excellent work in this regard.

Manchuria is rich in minerals such as coal, iron, gold, lead, silver, and asbestos, but the only large mines worked in 1919 were at Fushun, Penhsihu, and Anshanchan. Although there are valuable coal deposits throughout Manchuria, the fact that transportation is controlled by Japanese makes it practically impossible for Chinese to operate on a paying basis any of the smaller mines in the vicinity of the Japanese railway zone. Realizing this fact, certain Chinese in Mukden, with government support, engaged the services of American and Chinese mining experts with a view to opening and developing as many mines as possible along the Peking-Mukden line (Chinese government railway) to be entirely under Chinese control. The Anshanchan iron works were developed by the South Manchuria Railway and operated jointly by Japanese and Chinese. An output of 1,000,000 tons of pig iron per annum was anticipated. Gold is found almost everywhere in North Manchuria, but its mining has been little developed. Alluvial gold is found along the banks of the Amur River. The outlook for the manufacturing industry in Manchuria seemed promising, owing to abundance of coal, labor, and raw material. Much progress has been made in the manufacture of agricultural products, especially bean oil, bean cake, wheat flour, glass, paper, tobacco, matches, pongee, and sugar; also in brewing and tanning. Manufacture of bean cake and bean oil is the most important industry, in a good year shipments aggregating approximately 125,000 short tons of oil valued at more than \$26,000,000, and

1,250,000 tons of cake valued at \$44,000,000. The brewing of native wine ranks next in importance. Flour mills are situated for the most part around Harbin, in North Manchuria, for easy access to the wheat districts.

The total net trade in 1919 for the whole of Manchuria, as included in customs statistics of Dairen, Newchwang, Hunchun, Lungchingsun, Antung district, and Harbin district reached \$482,438,676—in point of value the largest amount ever shown and constituting an eloquent argument for the opportunities this region presents to American merchants. It should be borne in mind that these figures represent values rather than quantities, the high prices prevailing during 1919 making comparisons with previous years somewhat misleading as to actual material handled in trade. For comparison, the figures for the three years are given below:

Item	1917	1918	1919
Total net importation of foreign goods	\$116,169,316	\$127,292,793	\$202,676,923
Total net importation of Chinese goods	24,370,924	42,229,907	55,668,595
Total net exports, local goods	130,603,819	149,251,197	224,093,158
Grand total of trade	\$271,144,059	\$318,773,897	\$482,438,676

The hold of Japanese merchants on the trade of Manchuria grows stronger each year, the boycott having had practically no effect in this locality. The total value of Japanese manufactured goods imported into Manchuria during 1919 exceeded \$65,000,000 a large increase over the previous year, due probably to the advance in price of silver. The policy of the Japanese in relation to trade with Manchuria is a close partnership between the government, trading concerns, banking institutions, and railways, this condition no doubt being responsible for the contention of foreign firms that the slogan is "Manchuria for the Japanese." The growth of Japanese influence in North Manchuria was especially marked during the year, owing chiefly to introduction of the gold yen and to Japanese commercial and financial activity. Japanese real-estate holdings in Harbin greatly increased. Japanese firms were heavily interested in handling soya beans and bean cake, and practically controlled the export of soya-bean oil. The principal electric lighting plant in Harbin became the property of Japanese, and a Japanese company was negotiating for construction and operation of an electric street railway. A number of steamers on the Sungari River had become the property of Japanese.

The railway lines comprise the South Manchuria railway (Japanese), 730 miles; the Chinese Eastern Railway (Russian), 1074 miles; and the Chinese government railways, 465 miles, of which 134 miles have been managed by the Japanese. The postal and telegraph services have been conducted by the Japanese in the Province of Kwantung and the South Manchuria Railway zone, by Russians in the Chinese Eastern Railway zone, and by Chinese in the rest of the country. The mileage of telegraph and telephone systems was placed at 2400. Of the post offices, the Chinese had 335 and the Japanese 198.

MANEN, JOAN. See MUSIC, *Artists, Instrumentalists.*

MANITOBA. The easternmost of the Prairie Provinces of Canada, east of Saskatchewan and west of Ontario and Hudson Bay, and

extending from the American border northward to latitude 60°. Estimated area, 251,832 square miles; population (1916), 553,880, of which the rural population was 312,846. Chief cities with population in 1916: Winnipeg (capital), 163,000; Brandon, 15,225; Portage la Prairie, 5892; and St. Boniface, 10,022. It is under a lieutenant-governor and a Legislative Assembly of 49 members elected for five years by male and female suffrage. Women are entitled to sit in Parliament. The Lieutenant-Governor in 1920 was Sir J. A. M. Aikins; prime Minister, T. C. Norris.

MANN, WILLIAM D'ALTON. Editor, died, May 17. For many years he was a conspicuous figure in New York as editor of the well-known society weekly, *Town Topics*. He was born at Sandusky, Ohio, Sept. 27, 1839, and educated as a civil engineer. During the Civil War he was a captain in the first Michigan cavalry. Later he

organized additional troops in the Michigan cavalry brigade and became a colonel in 1862. He acquired a fortune from the invention of improvements in the equipment of troops. After the war he was for several years proprietor of the *Mobile Register* and became the first Democratic candidate for Congress from the Mobile district under Reconstruction. In 1871 he invented and patented the celebrated boudoir car which bears his name and which was introduced not only in this country but throughout Europe; and he organized the Mann Boudoir Car Company in 1883, which was later bought out by the Pullman Company. After 1891 he was the editor and president of *Town Topics*. He also founded and became the manager of the monthly magazine entitled *The Smart Set*.

MANURES. See FERTILIZERS.

MAPPING. See AERONAUTICS.

MARATHONS. See CROSS COUNTRY RUNNING.

MARCHANT, CHARLES GEORGE. Eminent English organist, died in Dublin, January 16. He was born in Dublin in 1857. From 1879 until his death he was organist at St. Patrick's Cathedral, Dublin, and conductor of the Dublin University Musical Society.

MARGULES, MAX. See METEOROLOGY.

MARIETTA COLLEGE. A non-sectarian, co-educational institution at Marietta, Ohio, founded in 1835. For the fall session of 1920 there were 192 men and 96 women enrolled. The faculty consisted of 19 members, four having been added in the course of the year. The productive funds amounted to \$726,740, and the income to \$70,716. There were 82,000 volumes in the library. The college was conducting a campaign to add \$500,000 to the endowment and already about \$425,000 had been pledged which sum included a promise from the General Education Board of \$150,000 on the completion of the balance of the sum to be raised. President, Edward Smith Parsons.

MARINE DISASTERS. See SAFETY AT SEA.

MARINE ENGINES. See INTERNAL COMBUSTION ENGINES; SHIPBUILDING.

MARINE INSURANCE. See INSURANCE.

MARITIME PROVINCES. The name applied to the Canadian provinces of New Brunswick, Nova Scotia, and Prince Edward Island.

MARKETING FARM PRODUCTS. See AGRICULTURE, UNITED STATES DEPARTMENT OF, and AGRICULTURAL EXTENSION.

MARQUETTE UNIVERSITY. An institution of the higher learning under Roman Catholic direction at Milwaukee, Wis., founded in 1907. The enrollment for the fall session of 1920 was 3426 and for the summer session 195. There were 210 members in the faculty. The income for the year amounted to \$1,500,000. There were 30,000 volumes in the library. Plans were under way for the building of the School of Dentistry and the College of Medicine. President, Rev. H. C. Noonan, S.J., M.A.

MARSHALL, CHARLES. See MUSIC, *Opera*.

MARSHALL, WILLIAM LOUIS. Army officer, died July 2. He was born at Washington, Ky., June 11, 1846; educated at Kenyon College, Ohio, and enlisted in 1862 as a private in the Kentucky cavalry. After the war he studied at West Point, where he graduated in 1865, and where he taught in the department of natural and experimental philosophy, 1870-71. In 1873 while he was in charge of the Colorado section of explorations west of the 100th meridian, he discovered Marshall Pass across the Rocky Mountains and later while still engaged in the work of exploration he found the gold placers of Marshall Basin in Colorado (1875). He had charge of the construction of levees in the Southern States, of improvements in the Mississippi River, of the harbors of Lake Michigan, and of various river improvements in Illinois and Wisconsin, from 1881 to 1890; and for the next 10 years he was in charge of the construction of the Hennepin Canal. From 1900 to 1905 he had charge of the construction of fortifications in New York Harbor and of improvements in the main channels; and he was in command of the corps of engineers, United States army, at the time of his retirement, June 11, 1910. After his retirement he was still active in various important engineering enterprises including the protection of Imperial Valley, Cal., from the overflow of the Colorado River, 1914-15.

MARTIN, Sir THOMAS CARLAW. Scottish journalist, died at Edinburgh, Scotland, at the end of October. From 1911 to 1916 he was director of the Royal Scottish Museum. He was born in 1850 and first entered the civil service but subsequently went into journalism. For 18 years he was editor of the *Dundee Advertiser* and he continued in newspaper work until 1910.

MARTINIQUE. An island in the West Indies, forming one of the Lesser Antilles; a French colony. Area, 385 square miles; population (1916), 193,087. Capital, Fort de France, with a population of 26,399. Imports (1918), 54,770,959 francs; exports, 90,800,171 francs, rum and sugar being the main exports. In 1918 the budget balanced at 11,079,999 francs. Tonnage of vessels entered in 1918 was 328,269; cleared, 218,780. The steamships of French and American companies visit the island regularly and there is communication with the Continent by means of cables. It is under a governor and general council, and an elective municipal council, and is represented in the French Parliament by a Senator and two Deputies.

MARYLAND. POPULATION. According to the preliminary report of the census of 1920,

there were, 1,449,661 residents in the State, Jan. 1, 1920, as compared with 1,295,346 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 47,908, a falling off of 2.1 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	670,000	25,795,000	\$20,894,000
	1919	680,000	27,880,000	39,032,000
Oats	1920	65,000	2,112,000	1,478,000
	1919	65,000	1,820,000	1,492,000
Wheat	1920	670,000	11,390,000	18,794,000
	1919	785,000	10,598,000	22,788,000
Tobacco	1920	85,000	30,825,000	8,881,000
	1919	29,000	19,575,000	5,872,000
Hay	1920	478,000	741,000	18,453,000
	1919	456,000	688,000	15,296,000
Potatoes	1920	60,000	6,120,000	5,814,000
	1919	55,000	5,170,000	6,721,000

* Pounds. * Tons.

See AGRICULTURAL EDUCATION.

TRANSPORTATION. In 1919 the total mileage of first line track was 1409. The Public Service Commission reported 26 steam railway corporations in the State on Jan. 1, 1920. Of these the Baltimore and Ohio, and the Philadelphia, Baltimore, and Washington are the longest.

LEGISLATION. Among the measures passed in the regular session of the legislature the following may be mentioned: Provision for the "merit system" and for a commission to be appointed by the governor for six years to insure the enforcement of the civil service law; centralization of the State purchasing department; creation of a State athletic commission to supervise boxing and wrestling; creation of State racing commission; creation of a commission to revise and prepare industrial and welfare laws; prevention of fraud in respect to securities offered for sale; revision and codification of mining laws; requiring the singing of "The Star-Spangled Banner" at the opening of certain schools; increasing compensation of members of legislature; authorizing motion pictures on Sunday subject to a referendum vote; creation of war records commission.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 238,117; Cox (Democrat), 180,626; Debs (Socialist), 8876; Christensen (Farm-Labor), 1645; Cox (Socialist Labor), 1178; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 138,359; Hughes (Republican), 117,347; Hanly (Progressive), 2903; Benson (Socialist), 2674; Reimer (Socialist-Labor), 756. The vote for United States Senator in 1920 was: Weller (Republican), 184,299; Smith (Democrat), 167,200; Iverson (Independent), 21,345; Toole (Socialist), 6559; Hawkins (Independent), 6538; Lang (Socialist-Labor), 2569.

OFFICERS. Governor, Albert C. Ritchie; Secretary of State, Geo. L. Radcliffe; Comptroller, Hugh A. McMullen; Treasurer, William P. Jackson; Attorney-General, Alexander Armstrong; Superintendent of Education, McCoy Hall; Adjutant-General, Henry M. Warfield.

JUDICIARY. Supreme Court: Chief-Judge, Andrew Hunter Boyd; Associate Judges, John R. Pattison, Albert Constable, T. Scott Offutt, William H. Thomas, Hammond Urner, John P. Briscoe, Henry Stockbridge.

MARYLAND, UNIVERSITY OF. An institution of higher learning at College Park, Md., founded in 1856. The number of students enrolled in 1920 was 666. There were 54 members in the faculty. President, A. F. Woods.

MASSACHUSETTS. POPULATION. According to the preliminary report of the census of 1920, there were 3,852,356 residents in the State, Jan. 1, 1920, as compared with 3,366,416, in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 31,982, a falling off of 13.4 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	21,000	840,000	\$1,050,000
	1919	26,000	1,508,000	2,594,000
Tobacco	1920	10,200	15,810,000	6,419,000
	1919	10,000	15,400,000	7,130,000
Hay	1920	457,000	633,000	17,540,000
	1919	456,000	677,000	18,204,000
Potatoes	1920	32,000	4,000,000	6,000,000
	1919	31,000	2,790,000	5,301,000

* Pounds. ° Tons.

FINANCE. Cash on hand, Dec. 1, 1919, \$12,065,772; receipts during year, \$136,588,178; payments, \$132,353,938; cash on hand Dec. 1, 1920, \$16,300,012. The net receipts for the ordinary expenses of the department for the year ending Dec. 1, 1920, from taxes, licenses, etc. were \$70,751,917 and the net payment for the running expenses of the department were \$70,543,183. Total bonded indebtedness, Dec. 1, 1920, \$143,150,662; sinking funds, \$50,914,469; total net bonded debt, \$92,236,193. Net direct debt, \$35,128,240, a decrease for the year of \$5,304,965; net contingent debt, \$57,107,953 an increase of \$5,982,311.

LEGISLATION. Among the measures passed by the legislature may be mentioned: A daylight saving law; relief to tenants in the housing crisis; the appointment of a fuel administrator; authorization of amateur sports on Sunday afternoons; creation of a State boxing commission; authorization of the regulation of billboard advertising; continuance of the commission on the necessities of life; authorization of purchase of waste land for reforestation; act relative to the appointment of police-women in Boston; and provision of facilities for women's voting when the suffrage amendment was ratified; many measures on behalf of the veterans of the late war; extension of borrowing power of coöperative banks; removal of technicalities from the workmen's compensation law; simplification of remedial wage board legislation and of the minimum wage scale; provision for public clinics. Among the measures lost were the 2.75 per cent beer bill; the bill providing for the censorship of motion pictures; the loan shark bill; and measures believed to be injurious to insurance and saving institutions. The Governor's message on the subject of his veto of the beer bill contended that at that time such legislation was merely deceptive—that no one would really dare to act upon such laws.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 681,153; Cox (Democrat), 276,691; Debs (Socialist), 32,265; Cox (Socialist Labor), 3583; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 268,784; Wilson (Democrat), 247,885; Benson (Socialist), 11,058; Hanly (Prohibitionist), 2993.

The vote for governor in 1920 was: Cox (Republican), 643,869; Walsh (Democrat), 290,350; Hutchins (Socialist), 20,079; Mulligan (Socialist Labor), 6383.

OFFICERS. Governor, Calvin Coolidge; Lieutenant-Governor, Channing H. Cox; Secretary of the Commonwealth, Albert P. Langtry; Treasurer, Fred J. Burrell; Attorney-General, J. Weston Allen; Auditor, Alonzo B. Cook.

JUDICIARY. Supreme Court: Chief Justice, Arthur Prentice Rugg; Justices, Henry King Braley, Charles Ambrose De Courcy, John Crawford Crosby, Edward Peter Pierce, James Bernard Carroll, Charles Francis Jenney. See EDUCATION IN THE UNITED STATES.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY. A non-sectarian Technological institution at Cambridge, Mass., founded in 1861. There were 1401 students in the summer school and 3500 were enrolled for the regular fall session. The faculty numbered 141. The income for the year was \$525,285. There were 140,730 volumes in the library. A Pratt School of Naval Architecture was under construction from funds left by Mr. Pratt prior to the war. During the year the endowment fund, including the \$4,000,000 given by Mr. George Eastman, came to a little over \$8,000,000. Acting president, Dr. Elihu Thomson, succeeding Dr. MacLaurin, who died January 15th.

MATCHAM, FRANK. Theatrical architect, died in England in May. He was born in 1854. He was one of the most successful theatrical architects in England where more than 100 theatres and music halls were designed by him including the Coliseum and Palladium.

MATERNITY INSURANCE. See SOCIAL INSURANCE.

MATHERS, HELEN. British novelist, died, March 11. She was born in Somerset in 1853 and began writing in childhood. Before she was 20 years old she began work on a novel published in 1875 under the name of *Comin' Thro' the Rye*, which won an immediate popularity and passed through many editions during the next 25 years, being translated into several languages. Another popular novel of hers was *Cherry Ripe* (1877), and still another, *Bam Wildfire* (1897), but these though successful did not repeat the success of her first novel. Other novels were: *My Lady Greensleeves*; *Sam's Sweetheart*; *Story of a Sin*; *A Man of To-day*; *Murder or Manslaughter*; *Found Out*; *Blind Justice*; *Becky*; *Cinders*; *The Ferryman*; and *Love the Thief*.

MURITANIA. A so-called Civilian Territory of French West Africa (q.v.), consisting of eight districts with a total area of 344,967 square miles. The natives, who are for the most part Moorish Mohammedans, number about 250,000. It is under a commissioner of the government-general.

MAURITIUS. An island belonging to Great Britain in the Indian Ocean, 500 miles east of Madagascar, constituting a British crown colony. Area, about 720 square miles; population (1911), 377,083; estimated, Jan. 1, 1918, 384,951. Capital, Port Louis, with a population in 1911 (with suburbs) of 50,060. The greater part of the population is Indian (252,251 in 1911). Total imports (1918) £2,861,417; exports £3,715,445. Revenue, 1917-18, £903,776; expenditures, £857,359. The railway lines have a mileage of 119½. Dependent on Mauritius are a number of small islands, including Rodrigues and the St. Bran-

don, Chagos, and Eagle groups. Mauritius is under a governor aided by an executive council and a council of government, which is in part elective. Governor at the beginning of 1920, Sir H. Hesketh Bell.

MAXWELL, WILLIAM HENRY. British admiral, died July 1. He was born July 30, 1840; entered the navy in 1854 and was midshipman in the Baltic during the Crimean War. He subsequently was engaged in the African coast service for the suppression of the slave trade. In 1869, while commanding the *Dryad*, he captured a slaver on the Madagascar coast and freed 200 slaves. He became a rear-admiral in 1889 and vice-admiral in 1895. During his retirement he was promoted to the rank of admiral.

MAXWELL, WILLIAM HENRY. Educator, died at Flushing, L. I., May 3. For many years he was superintendent of the public schools of Greater New York. He was born in Ireland, March 5, 1852; educated at Queens University, Ireland; and came to the United States soon afterwards. From 1887 to 1898 he was superintendent of the public schools of Brooklyn. He was then appointed to the same office for Greater New York. He was president of the National Educational Association in 1905; and published a number of text books, including *Elementary English Grammar*, *School Grammar*, etc.

MAYFLOWER. See **PLYMOUTH TRICENTENARY.**

MAYOTTE AND THE COMORO ISLANDS. An archipelago belonging to France and administered by the governor-general of Madagascar. Area, 837 square miles; population estimated at 197,000.

MCCARTHY, JAMES P. Newspaper editor, died in New York City, December 26. He was born at Worcester, Mass., in 1871, and went into a newspaper office when he was still a boy. Among the newspaper positions held by him were those of city editor of the *Worcester Telegram* and of the *Brooklyn Standard Union*; also that of Brooklyn manager of the *New York Herald*. He afterwards was on the editorial staff of the *New York Evening Telegram*. He wrote a textbook on journalism called the *Newspaper Worker* and he also wrote the *Rise of Dennis Haight*.

MCCLAUGHRY, ROBERT WILSON. Criminologist and prison warden, died in Chicago, Ill., November 9. He was born at Fountain Green, Ill., July 22, 1839, and graduated at Monmouth College in 1860. He served throughout the Civil War, reaching the rank of major when mustered out. In 1874 he was appointed warden of the Illinois State Penitentiary at Joliet, remaining in that office until 1888, when he became general superintendent of the Pennsylvania Industrial Reformatory. Three years later he was appointed Chief of Police in Chicago (1891-93) and then became successively general superintendent of the Illinois State Reformatory (1893-97); warden of the Illinois State Penitentiary (1897-99); and warden of the United States Penitentiary at Leavenworth, Kan. (1899-1913). He was regarded as an authority on criminology.

MCCLELLAND, JOHN ALEXANDER. British physicist, died April 13. He was professor of experimental physics at University College, Dublin, and commissioner of education for Ireland. He was born in 1870 and educated at Queens College, Galway, Royal University, graduating with honors. He became professor of physics at

the University College, Dublin, in 1900, and wrote largely on the subject for the scientific journals. He was known especially for his work in radio-activity.

MCGRAW, JOHN THOMAS. Lawyer, died at Grafton, W. Va., April 29. He was born at Grafton, W. Va., in 1856, and was educated at St. Vincent's College in that State and at Yale College. From 1885 to 1889 he was collector of internal revenue in West Virginia, and he was a member of the Democratic State Executive Committee for 12 years. He was a delegate to the Democratic National Conventions of 1896 and 1908, and a member of the Democratic National Committee for West Virginia after 1896.

M McNALLY, JAMES CLIFFORD. American consul, died August 5. He was born at Stratfordshire, England, May 12, 1865; was brought to the United States in 1868; graduated at St. Vincent's College, Latrobe, Pa.; and studied subsequently at St. Laurent's College, Montreal. He practiced law in Salt Lake City, 1891-1903, and was appointed by President Cleveland as Probate Judge (1894-1906). He was secretary of the American Legation and consul-general at Bogota, Colombia, 1898-99, and subsequently held diplomatic offices in Guatemala, Belgium, China, and Germany. From May 8, 1917, he was consul-general at Zürich, Switzerland.

MEAGHER, JOHN LUKE. Clergyman and writer, died at Long Island City, N. Y., May 8. He was born at Drangan, Ireland, Aug. 14, 1848; studied at Montreal, Canada, and was ordained to the Roman Catholic priesthood in 1875. He was pastor at Cazenovia, N. Y., for 10 years and for a long time was president of the Christian Press Association and the Christian Literary Union. He wrote *Truth Teaching by Signs and Ceremonies*; *The Festal Year*; *Man, the Mirror of the Universe*; *The Religion of the World*; *The Tragedy of Calvary*; *The Seven Gates of Heaven*; *What is man?* and other works. His books passed through many editions.

MEAT. See **LIVE STOCK.**

MECHLENBURG-SCHWERIN. Formerly a grand duchy and constituent state of the German Empire. The throne was vacated in November, 1918. For statistics, see **YEAR BOOKS** preceding 1919.

MECHLENBURG-STRELITZ. Formerly a grand duchy of the German Empire; proclaimed a republic in November, 1918. For statistics, see **YEAR BOOKS** preceding 1919.

MEDICAL PROGRESS. There has been no great outstanding fact in the evolution of medical and sanitary science during 1920. The menace of typhus fever to western Europe from the extensive foci in eastern and southeastern portions of the Continent is the most impressive to date. The persistence of so-called sleeping sickness or as it is now termed Epidemic Encephalitis is of importance but thus far there is no suggestion of a large incidence, victims being comparatively few and scattered. Yellow fever has reappeared in several small foci but the cause is now known and the prospects of keeping it under control by preventive vaccination are excellent. In theory bubonic plague is a menace but outside of its habitat the disease seldom gets beyond a few seaports. Under the head of nutrition the subject of internal secretions has received a great impetus through the writings of the biologist Steinach of Vienna; and the prospect of "rejuvenation" by transplantation of sex glands has

been entirely supplanted by the so-called autoplasmic method, in which a simple operation—ligation of the sexual duct—may accomplish all that has been claimed from transplantation. The subject of vitamins has reached the public and there is a large demand for preparations for self-medication. There is no expectation of benefit in the case of adults unless there has been some deprivation of them in the diet: hence their restriction to convalescence from serious disease. Under the head of psychotherapy it is noted that lay persons are practising psycho-analysis on a considerable scale, such practice not conflicting with any law; and certain abuses are said to have resulted even at this early stage. Under the head of radium its use in medical diseases is mentioned—it has generally been regarded as a surgical resource. Under the head of cancer we may mention that it continues to increase despite all measures intended to check its spread.

For details of Medical Progress the reader should consult the following sections: ALCOHOL SUBSTITUTES; ANÆMIA, SURGICAL TREATMENT OF; BUBONIC PLAGUE; CANCER; DIETETICS AND DISEASE; DIPHTHERIA; EPILEPSY; ENCEPHALITIS, EPIDEMIC; HAY FEVER AND ASTHMA; INSANITY; INTERNAL SECRETIONS; INFLUENZA; MALARIA; MENINGITIS; MENTAL CONFLICTS; PELLAGRA; RADIUM, MEDICAL USE OF; TUBERCULOSIS; TYPHOID FEVER; TYPHUS FEVER; VITAL STATISTICS; YELLOW FEVER.

MELTZER, SAMUEL JAMES. American physiologist, died in New York City, November 7. He made a number of important medical discoveries including a new method of artificial respiration. He was born in Russia in 1851; studied philosophy and medicine at the University of Berlin, and came to the United States in 1883, beginning his practice in New York. From 1906 to the time of his death he was the head of the Department of Physiology and Pharmacology at the Rockefeller Institute. Among his discoveries may be mentioned a method of reviving animals by "pharyngeal insufflation" and a new method of treating lockjaw (1914). He was a major in the Medical Officers' Reserve Corps and a member of many medical bodies.

MELVIN, HENRY ALEXANDER. Judge, died, April 24. He was born at Springfield, Ill., Sept. 28, 1865, and studied at the University of California. Having been admitted to the bar, he was district attorney and prosecuting attorney in Alameda County, where from 1901 to 1908 he served also as judge of the Superior Court. After Sept. 28, 1908, he was justice of the Supreme Court of California. After 1906, he held the chair of legal medicine in the Oakland College of Medicine and Surgery.

MENINGITIS. Inflammation of the membranes covering the brain is perhaps less understood by the great mass of people than any other serious and fatal malady. Its mortality is very high and it causes a great loss of life. Epidemic meningitis so called occurs sporadically and causes an average of about five deaths a week in New York in non-epidemic years; and the mortality from tuberculous meningitis is about the same. Chronic syphilitic meningitis which also involves the brain substance is the cause of the well known fatal type of insanity known as paresis which causes several deaths weekly. There is also the so-called simple meningitis, which according to textbooks does not occur alone but only as a complication of some general infec-

tion. Be this as it may, the vital statistics of cities in tropical and subtropical countries show that very many death certificates are filled out "simple meningitis." In New York statistics show that there are several deaths weekly from this cause, and that they occur at all periods of life. There appears to be some connection between simple meningitis and hot climates. It has been said that some of these cases may be due to overindulgence in alcohol, and fear of meningitis appears to be a deterrent to the use of spirits in some of these countries. In general meningitis differs from other secondary lesions because it need not be due to the infected state of the blood. Infections and even the mere presence of infectious germs in the vault of the pharynx are often sufficient to infect the interior of the brain. Our knowledge of the diagnosis and treatment of meningitis has been greatly increased of late years by the common practice of puncturing the spinal canal and examining the contents for bacteria and the products of inflammation. The withdrawal of a certain amount of this fluid which is present under pressure gives great relief and may lead to recovery. During the war there was an extensive prevalence of epidemic meningitis and despite the deadly character of this affection repeated tapplings for relief sometimes led to recovery. The principal resource was however the use of the specific anti-serum.

MENTAL CONFLICTS AND MENTAL DISORDERS. Professor Jung of Zurich, one of the leading authorities on psychoanalysis in the cure of mental disorders delivered an address on the mental mechanisms through which psychical affections are generated, before the Royal Medical Society of Great Britain. The regularly trained physician who looks for an organic causation of mental disease is usually unable to recognize the true motivation of the latter. The action of strong emotional states like fright and the effects of mental overexertion, insomnia, etc., are sufficiently obvious but the most common factor, to wit, a mental conflict, is generally overlooked, although he may seek for one. The trained psychoanalyst will recognize it at once. The ordinary practitioner will frequently unearth some organic disease and will perhaps attribute the mental state to this lesion but usually he will be mistaken. Jung devotes most of his effort to the subject of mental conflicts. They are very common among parents and among others in association with parents. Thus a mother may wish a son or daughter all happiness in regard to the great adventures of life such as love and marriage, education, religion, choice of a business career, etc., but will at the same time look forward with the greatest dread to the separation which may be involved. When this separation is impending the mother may fall ill with a disease picture at once recognizable as of psychic origin. The type of disease is comprised under hysteria.

But there are also subjects whose disease picture comes under the head not of hysteria but of precocious dementia, and in these subjects there is no evidence of the organic lesions of dementia but instead a well known history of mental conflict. These subjects are often so ill mentally that they are committed to asylums where the fear that they will never be released precipitates much more serious alienation; yet these

can be cured if taken at an early period before they have become truly insane.

MERCHANT MARINE ACT. See SHIPPING.

MEREDITH, EDWIN T. Secretary of Agriculture, assuming office February 2. He was born and reared on a farm in Iowa, and soon after leaving Highland Park College he became associated with the *Farmers' Tribune*, subsequently becoming owner and publisher. In 1902 he started a new paper under the name of *Successful Farming*, which under his management became a large and thriving enterprise. In 1917 he was appointed by the Secretary of the Treasury a member of the Board of Excess Profits Advisors. He served for several years as director of the Chicago Federal Reserve Bank, was a member of a commission appointed by the President to visit Great Britain and France in 1918 for the purpose of advising in the industrial and labor policies of our allies in the great war, and in 1920 was elected president of the Associated Advertising Clubs of the World. On the transfer of David F. Houston to the Secretaryship of the Treasury, Mr. Meredith became Secretary of Agriculture (February 2). As Secretary he conducted a wide campaign of education on the work of the Department and its importance not only to the farming people but to the business world and life of the whole country.

MERSON, LUC OLIVIER. French painter, died in Paris, November 14. He had been a professor at the Ecole des Beaux-Arts. He was born May 21, 1846, and made his success at an early age, winning the Grand Prix of Rome in 1869. He was a member of the Institute and Commander of the Legion of Honor.

MESOPOTAMIA. The region of the Euphrates and Tigris rivers between northern Arabia and Persia; formerly a division of the Turkish Empire in Asia, comprising the vilayets of Mosul, Bagdad, and Basra (Busrah); overrun by the British during the war and occupied by them since. The British captured the town of Basra, Nov. 22, 1914, and Bagdad, March 11, 1917. For status as determined under the Treaty, see below and see also article WAR OF THE NATIONS. Area, 143,250 square miles; population, according to the census of 1920, 2,840,282, divided as follows: Bagdad, 1,360,304; Basra, 785,600; Mosul, 703,378. According to religion, the population consisted of 1,146,685 Sunnite Mohammedans; 1,494,015 Shiite Mohammedans; 87,488 Jews; 78,792 Christians; 42,302 of other religions. The chief seaport is Basra at the head of the Persian Gulf. In 1920 there were 13 government primary schools, 4 municipal schools aided by the state, a teachers' training school, and a survey school had been opened, and a beginning had been made in agricultural education. Resources are extensive but undeveloped. The oil deposits have been noted since the time of the Romans, and according to experts rich unworked oil wells are to be found in the vilayets of Bagdad and Mosul. Oil wells near Kerkook have been used for centuries, and wells are now exploited at Gayara near Mosul and at Mandali on the Persian frontier northeast of Bagdad. Oil sources have been discovered in Kurdistan. Asphalt deposits at Hit have been used since the time of Nebuchadnezzar. The following information in respect to production and commerce was supplied by the United States Bureau of Foreign and Domestic Commerce in November, 1920:

PRODUCTION. Much attention has been devoted

recently to agriculture. Experimental farms for ascertaining the most profitable kinds of wheat and barley to raise have been started in different parts of the country. Model dairy farms for improving the methods and placing before the inhabitants practical working dairy farms on modern principles are in operation. Experimental cotton farms have demonstrated that cotton can be profitably grown in all parts of Mesopotamia, and already a good many farmers have started the cultivation of cotton with the aid of experts from Egypt and India. Groundnuts or peanuts have also been successfully raised at Fellujah on the Euphrates. In 1919 and 1920, however, cultivation of the land was greatly hampered by the lack of farm labor, the price of labor of all kinds having gone up 100 or 150 per cent.

In June, 1919, the ancient canal Saqlawiyah, near Fellujah, was formally reopened and the waters of the Euphrates were allowed to pass through. This canal follows approximately the course of the ancient Nahr Isa Canal, once navigable, which was constructed in 762 A.D. The present canal provides water enough for the irrigation of 70,000 acres in winter and 36,000 acres in summer. The level of the bed of the canal, which is 25 feet wide, will allow a depth of 5 feet of water flowing through the regulator when the river is at its lowest, and in times of flood this depth can be increased to 10 feet.

Some idea of the magnitude of the work done to improve and enlarge the irrigation system of Mesopotamia may be gathered from the following budget for the year ending March 31, 1920: Irrigation maintenance, \$648,800; irrigation new works, \$2,358,388; flood protection maintenance, \$778,560; flood protection new works, \$389,280; buildings and roads maintenance, \$194,640; total, \$4,369,668.

The Yousoufieh Canal has been reopened, bringing water from the Euphrates to the vicinity of Bagdad and greatly increasing the production of vegetables for the Bagdad market. Other canals opened, considerably increasing the cultivated area of Mesopotamia, are: New Khalis Canal, from the Diala River; Beni Hassan Canal, from the Euphrates River; and the Georgivah Canal, from the Euphrates River.

COMMERCE. The total commerce of Mesopotamia for the calendar year 1919 amounted to \$95,453,362, which is a much larger volume of business than ever transacted before in one year. The division of this business is shown in the following figures: Imports through Bassorah, \$45,390,819; imports through Bagdad, \$14,311,201; total imports, \$59,702,020; exports through Bagdad, \$24,038,166; exports through Bassorah, \$11,713,176; total exports, \$35,751,342; total foreign trade, \$95,453,362.

Cotton goods amounting to over \$28,000,000 accounts for 47 per cent of the total importation into Mesopotamia. It is estimated to be four times the amount in value and double the quantity compared with the normal importation before the war. The cause of this unusually large importation was the depletion of the markets in Mesopotamia and Persia during the war. For about four years the only imports reaching Bagdad came in through the desert from Bassorah at great risk and expense, as ordinary communication between Bagdad and Bassorah was cut off. About one-half of the cotton goods imported by Bagdad merchants goes ultimately to Persia. On

account of the disturbances in Russia, the route to northern Persia via Batum has been unsafe for some time, and consequently Persia has been supplied to a larger extent than usual through Bagdad.

Sugar is the next largest item in imports, shipments amounting to \$7,078,719 and accounting for 11 per cent of the total imports in 1919. A large quantity of sugar is consumed in Mesopotamia and much is exported to Persia. From 12,000 to 15,000 bags of sugar (220 pounds each) arrive monthly in Bagdad via Bassorah. During 1919 nearly all the sugar came from India, but was originally from Java and China with the exception of loaf sugar from Egypt. Recently Belgium shipped 20,000 bags of loaf sugar directly to Bassorah for Bagdad.

Tea is imported chiefly from India and Ceylon for the Persian market. There is a large stock on hand in Bagdad and the market prices has depreciated. The total value of the amount imported during 1919 was \$2,115,478, equal to 3.5 per cent of the total imports for the year. Silk manufactures were imported to the extent of \$2,089,367, being 3.5 per cent of the total imports.

The largest item of export was cotton piece goods, valued at \$17,154,059, sent into Persia from Bagdad. The total imports amounted to \$28,558,632, and reexports, \$17,154,059, leaving \$11,404,573 for consumption in Mesopotamia. This business is nearly all in the hands of local Bagdad merchants having branches in Manchester. The 1919 date crop was unusually good, and the total exports amounted to \$7,183,203, greatly exceeding the average value of pre-war annual exports.

Since the occupation of Mesopotamia by the British, but a limited quantity of grain has been exported, but with the increased acreage now, under irrigation and with the introduction of labor-saving machinery, the country may become a grain-exporting country.

COMMUNICATIONS. The question of river transportation from Bassorah to Bagdad, although much improved over 1918, has been the cause of considerable complaint. The military authorities undertook to relieve the situation by carrying for merchants a certain amount of freight per month, but they have now turned back to the Mesopotamia-Persia Corporation (Ltd.), formerly Lynch Bros., all the requisitioned river steamers and have also sold it some of the new steamers constructed for the government during the war for military purposes. In addition, the railway between Bagdad and Bassorah is carrying freight and passengers.

Before the war the only railway in Mesopotamia was the small section of the Bagdad Railway running from Bagdad north to Samara, about 80 miles, which was built by the Germans. During the war several lines were built for military purposes, aggregating 1100 miles. At the present time 937 miles of these railways have been turned over to the civil administration for commercial purposes, and the remainder taken up. The line running from Bassorah to Bagdad was opened up to traffic on Jan. 15, 1920, and it is now possible to go from Bassorah to Bagdad in 22 hours by a comfortable train instead of the long voyage by river steamer against a swift current. Freights will be much reduced as soon as sufficient rolling stock can be obtained to accommodate the increased business. The line running from Bagdad to the Persian frontier at

Quarato has already materially reduced the freight rate into Persia. Engineers have arrived to survey the railroad on to Teheran via Kermanshah and Hamadan. The Persian Gulf will thus soon be linked up with the capital of Persia by railway via Bagdad.

There are not direct steamers running between American ports and the Persian Gulf. Shippers from America to Bagdad and Bassorah can occasionally get freight accommodation directly to Bombay, but generally it is necessary to ship to England with transshipment to Bombay and then another transshipment is necessary to Bassorah. The India Office is now running some of the old German steamers from London to the Persian Gulf once a month.

GOVERNMENT, ETC. In 1920 the country was under a military administration pending the determination of the British mandate. Local political officials were appointed for the districts under the direction of the Secretary of State for India and under the control of a civil commissioner. The work of administration was divided into a number of departments including law, education, customs, agricultural development, etc. Municipal governments had been established where possible and tribal councils had been created. At the beginning of 1920 the commander in charge of the British force was Lieut.-Gen. Sir J. A. L. Haldane and the civil commissioner was Lieut.-Col. Sir A. H. Wilson.

Revolts against British rule were reported at intervals throughout the year and in the autumn resistance continued. A holy war had been preached and it was greatly feared that the Mohammedan population would respond to the appeal. In the lower Euphrates region the natives refused to join, but around Samara in the autumn, serious conditions were reported. Several attacks were made upon the town. In the middle Euphrates region, British Indian troops gained control of the water supply of the district in the autumn. A section of the railway was held by a hostile tribe, but they were driven out by British air bombers. In October and November conditions seemed to be improving everywhere, except in the region around Samara. See **GREAT BRITAIN, WAR OF THE NATIONS AND PETROLEUM.**

MESSEL, RUDOLPH. British chemist, died, April 18. He was the manager of the Royal Institute and president of the Society of Chemical Industry. He was born at Darmstadt, Germany, Jan. 14, 1848, and educated there and in the universities of Germany. In 1870, he went to England and applied himself to the chemical industry, in which he introduced a number of new processes, including a successful process for the manufacture of sulphuric anhydride by catalysis.

METALLURGY. In 1920 there were few new developments or extensive improvements in metallurgy. The coming deflation and curtailment of production of many metals, early was realized and in the case of gold there was restricted output in view of market conditions. The conditions of labor however made it necessary at most metallurgical plants to pay increased attention to the use of mechanical appliances and in place of common labor to utilize the services of a few skilled men. In fact as never before in the industry was the labor question so prominent not on account of strikes and other troubles, but as an element in economic

operation which must be considered in the future following any return to normal conditions.

During the year however there were some developments worthy of mention and consideration and as usual the YEAR BOOK summarizes the more significant of these from the authoritative annual reviews appearing in *Engineering and Mining* (New York) and the *Iron Age* (New York).

GOLD AND SILVER. An outstanding feature of the metallurgy of the precious metals in 1920 was the interest manifested in improvements for the cyanide process. This was further emphasized by the death on March 16, 1920, of John Stewart MacArthur who with R. W. and William Forrest of Glasgow in 1886 began experiments that resulted in the cyanide process which in 1890 found commercial application in South Africa as a substitute for the chlorination process. This cyanide process for 30 years had remained virtually unchanged save in mechanical details, and in its increased application to refractory gold and silver ores. There was discussion during the year of the use of bromo-cyanogen, which seemed to act as an oxidizing agent assisting the solution of the gold in an alkaline cyanide. However roasting and aëration in most cases had supplanted the use of bromo-cyanogen, and in Western Australia a large mine which had been unable to secure bromide salts during the war adopted the more usual alkaline cyanide treatment and decided to retain it permanently. Low grade cyanide salt was used during the year with considerable success in American and Canadian mills, and was produced at Niagara Falls from cyanamid, manufactured there for the fertilizer industry. Increased extraction from 68 to 86 per cent was secured at the Connemara Mine in Rhodesia by heating the ore previous to cyaniding. This was known as "baking" to distinguish it from a higher degree of heating or roasting, and served to remove the water of crystallization from the hydrated oxides of iron so that the ore was more amenable to cyanidation. In connection with cyaniding flotation was applied to the recovery of slime concentrates at the Belmont Shawmut mill in California. The process involved classifying and treating the various concentrates. The granular concentrate was roasted, then mixed with the raw slime concentrate and then cyanided. It was claimed that while cyaniding the raw concentrate would afford an extraction of only 60 per cent, the treatment outlined would increase it to from 91 to 94 per cent.

Flotation methods were increasingly used in various fields. At the Shattuck mill at Bisbee, Ariz., the concentration of the silver-lead carbonate ores was so treated with satisfactory results. A flotation method to eliminate graphitic material in certain ore bodies which produced gold losses by precipitation was reported from the McIntyre-Porcupine mines of Ontario. In the cobalt district of Ontario flotation methods were used to aid in the recovery of silver with considerable economies, in the Coniagas mill by means of a cleaner cell flotation concentrates were increased from 150 ounces per ton to 450 ounces per ton.

COPPER. The use of pulverized coal in place of coke in both blast and reverberatory furnaces was an interesting development of the year in the metallurgy of copper. At the new Cerro de Pasco Mining Company smelter at Oroya, Peru, under construction with a daily capacity of 2500

tons, the blast furnaces were designed to burn pulverized coal and were the first furnaces of this type to be installed in a large plant. In large installations operating with pulverized coal it was claimed that for about 30 per cent of the coke of the charge an equal weight of pulverized coal could be substituted. In a large plant equipped with reverberatory furnaces in South-western United States the coal was fed directly to the furnace by fan pressure after it had been pulverized, omitting the complicated drying and separating apparatus required when, as in most instances, the coal used varied in its moisture content. In the plant in question the coal used was remarkably free from moisture and assisted in the operation. The year's noteworthy feature in this respect was the size of the plants thus equipped, for small reverberatory furnaces had used pulverized coal for some time. An innovation in preparing the charge for the blast furnace, where nodulizing had been practiced, adopted at Chrome, N. S., was to flatten out the nodules by passing the product so treated between rolls. Several improvements in the hydro-metallurgy of copper were practiced during the year or were under experimental test. A process of using liquid sulphur dioxide as the precipitant of the copper from the leach solution, under development in the Anaconda research laboratory was adopted by the Andes Copper Company. An improvement in handling the cement copper from rejected electrolyte was reported from Ajo, Arizona, and consisted in dissolving the cement copper in agitation tanks in a portion of the electrolyte containing approximately 0.5 per cent ferric sulphate. The effect was to reduce the ferric sulphate to the ferrous state and the solution was then added to the purified electrolyte from the sulphur-dioxide and then the combined solutions returned to the electrolytic tanks.

In copper concentration, as in other fields of metallurgy, flotation continued to be of leading interest, though not on account of any great increase in knowledge of the various phenomena nor in presenting any adequate explanation. One of the chief engineers of Mineral Separation, the owner of the patents under which the process is worked, a Mr. Sulman of London, published a long paper on the subject, which was generally discussed, and both favorably and unfavorably criticized. In the United States Mineral Separation continued its various infringement suits and in its turn was under investigation by the Federal Trade Commission and the American Mining Congress. The whole question of flotation engrossed the attention of many competent investigators and there were a number of new machines placed on the market. Various flotation reagents other than oils were being investigated, and it was believed that the discovery of selective flotation reagents that would finally solve the complex sulphide ore problem might be expected.

The concentrates obtained from flotation were the subject of sintering to prepare them for blast-furnace treatment in considerable experimentation that was under way during the year. These developments indicated a considerable control of the product for subsequent treatment.

As showing the high development of copper smelting it was stated that the industry had reached a point where in many cases the by-products produced showed a greater profit than the principal profit. In not a few instances

this condition was brought about by outside influences seeking to eliminate and curb the nuisance of smelter smoke. However, the result was that the collection of flue dust through the agency of bag houses or the Cottrell electrical precipitation method served to secure large quantities of rare metals and metallic and other compounds. In some cases even the sulphur gases can be utilized and the Tennessee Copper Co. turns practically all its sulphur into sulphuric acid. In other cases the sulphur is reclaimed in the form of liquid sulphur dioxide to be sold to the pulp mills and also to be used in the manufacture of concentrated sulphuric acid by the contact process. In fact, a list of the recovered and saleable by-products of the industry as obtained by the larger smelting companies included sulphuric acid, liquid sulphur dioxide, gold, silver, lead, zinc, zinc oxide, zinc dust, test lead, blue vitriol, litharge, cadmium, bismuth, thallium, selenium and its compounds, tellurium, arsenic, fungicides, insecticides, phosphate fertilizers, aluminum and aluminum compounds, antimony, lithopone, platinum, palladium, iridium, nickel and nickel sulphate, fire brick and common brick.

The copper industry in 1920 was reaching a high degree of efficiency and economy and it was believed that in the near future practically everything in the ore would be saved and put to practical use. Long since the slag from the smelters had been used for railway ballast, for building highways and for concrete, particularly in foundation work. Moreover, the waste heat was being recovered from all reverberatory furnace installations, and in a few cases was recovered from slag in the form of low-pressure steam. At the Tacoma Smelting Company's plant the slag pots were used to heat certain buildings, the only requirement being to change the slag pots at intervals. Considerable coal consumption was saved in this way.

LEAD. The introduction of labor-saving devices and machinery for handling ores, fluxes, and by-products and the installation of improved crushing and sampling facilities characterized lead metallurgy in 1920 rather than any special advances in technical processes. Pulverized coal as a substitute for coke figured in the lead blast furnace as in copper, but not so thoroughly or with the same degree of success, though to an encouraging degree. However, where coke was expensive and bituminous coal was available at reasonable cost, substantial economies could be and were secured. Nevertheless, pulverized coal was used in many departments of lead smelting and refining, a comparatively recent use being as a substitute for oil for ignition of the charge with the Dwight and Lloyd sintering apparatus.

The Cottrell fume precipitating apparatus was finding increased application in lead smelters of the Western United States, being used in some cases not only for the treatment of roaster gases, but for blast furnace gases. At various plants modifications of the fundamental devices had been made which had resulted in important economies and increased facility of operation.

Zinc. By 1920 the electrolytic process in the metallurgy of zinc had demonstrated its success and further improvements were in process. Methods of specially treating the ores had been developed such as roasting in such a way that no sulphuric acid was required for the lixiviation of the zinc, and various methods for the removal

of other impurities so as to facilitate electrolysis. The main obstacle in the way of the electrolytic process becoming a formidable competitor of the older method of distillation, was that it must be done on a large scale involving a plant whose cost per unit of capacity was greater than in the distillation process. Special roasting furnaces for zinc ores were developed during the year, showing important improvements and economies.

By 1920 the production of electrolytic zinc had risen to 57,441 tons from 10,963 tons in 1916, or nearly 12 per cent of the total production for 1920. Electricity was also applied to the smelting of zinc ores in Norway and Sweden and in some large and encouraging experiments in the United States by Professor C. H. Fulton. In addition to two Scandinavian electrothermic plants that had been in operation for several years, a third plant at Glomfjord, Norway, began work in 1920, its method as in the case of the others being to fuse the gangue or useless minerals of the ore, drawing it off in the form of slag as was done in lead smelting. In the Fulton experiments the process in course of development was one of electrothermic dry distillation, as it was termed, and the work though not entirely completed commended itself to many experts.

NICKEL. In the metallurgy of nickel the three great producing companies of the world each employed different methods of refining, which they constantly seek to improve on the score of efficiency and economy and to obtain greater amounts of the valuable metals found in the nickel ores. The British American company used the electrolytic process invented by Hybinette. The International Nickel Co. of Canada, Ltd., employed the Orford salt-cake process, both at Port Colborne, Ontario, and Bayonne, N. J. The Mond works, in Wales, were using a process invented by and named from Dr. Mond, the original founder of the company.

The Sudbury ores of Ontario carry appreciable quantities of gold, silver, and metals of the platinum group. From the International Nickel Co.'s mattes, in 1910, a total of 1770 ounces of the platinum group metals was recovered, which included 642 ounces of platinum, 842 ounces of palladium, 227 ounces of rhodium, and 76 ounces of osmium, iridium, and ruthenium. The Mond Nickel Co.'s mattes furnished about 3078 ounces of platinum in 1915, 5474 ounces of palladium, and 917 ounces of iridium and rhodium. In 1916, 1917, and 1918 the recovery of platinum amounted to 3372 ounces, 4719 ounces, and 4958 ounces respectively.

IRON AND STEEL. Few important changes in theory or practice were to be recorded in the Metallurgy of Iron and Steel during 1920. There were many practical problems due to changing conditions which manufacturers had to meet and but little experiment was conducted. In the blast furnace increased bosh angles and wider hearths had demonstrated the possibility of increased tonnage and a lower fuel return. In fact so pronounced was this tendency that a bosh angle of 90 degrees was considered possible. In an open hearth plant using coke oven gas for fuel increased economy over current practice was secured by burning gas containing benzol and the light oils. This principle was also proposed for producer gas fired furnaces. It was suggested, however, that where the recovery of benzol was carried on in the plant the

same degree of economy might not be secured. An innovation of the year in producer gas-fired furnaces where coke oven gas was burnt, was to introduce the gas directly into the gas uptakes instead of through burners. Furnace construction change was suggested successfully in one instance on account of the coal shortage. This modification was with the object of changing from producer gas to oil without a delay of more than six hours.

One of the changes wrought by metallurgical developments in the automobile industry was the use of the electric furnace for tool and special steels to an extent that had almost eliminated the crucible process from American practice. In the making of ferro-alloys in the electric furnace one of the developments was the use of the Söderberg self-baking continuous electrode, a steel tube filled with carbonaceous material which bakes itself in the furnace as it is used. As the electrode is consumed an extension is welded on the top and the whole after being charged with the carbonaceous material is lowered into the furnace as the bottom part is consumed. This invention was used with economy of electrode cost and maintenance in ferrosilicon furnaces in Norway and its use in electric steel furnaces was considered a possibility. Electric steel installations in the United States continued (see IRON AND STEEL) and at the great United States Navy Ordnance plant at Charleston, W. Va., 35 ton Heroult furnaces, the largest to be built in the United States, were being installed for use early in 1921.

The electric furnace in the manufacture of cast iron was increasingly prominent in 1920, for it was especially available for the production of thin walled and complicated castings as an adjunct to the cupola for desulphurizing and for the manufacture of malleable iron. The ease of super-heating, the quick and complete desulphurization, and the ready control of the product rendered it especially useful in foundries where difficult shapes and exact specifications were the rule. The Sandberg method for the heat treatment of heads of rails with air or steam was in use in 1920 in several European and one American rolling mills. The result of the treatment was said to be increased life of track and facilities were being established so that the system could be followed without interfering with the ordinary processes. Experimental work of the year included the development of several grades of steel for resisting corrosion by water or acids and oxidation by heat. Both rolled products and castings of these types were made.

METALS. See CHEMISTRY, INDUSTRIAL and METALLURGY.

METCALF, LORETTUS SUTTON. Editor, died, January 15. He was born at Monmouth, Me., Oct. 17, 1837, and educated in the schools of Monmouth and Boston. After editing in succession several weekly journals in Massachusetts he was managing editor of the *North American Review*, 1876-1885. In 1886 he founded the *Forum*, which he edited till 1891. He founded the *Florida Daily Citizen*, at Jacksonville, Fla., in 1893, and was its editor until 1897.

METCALF, THEODORE A. See ROMAN CATHOLICS.

METEOROLOGY. Perhaps the most striking aspect of contemporary meteorology is the growing importance of several definite fields of application of this science, each having its own

devotees and its own literature. Thus we now recognize as fairly distinct branches of applied science Marine Meteorology, Agricultural Meteorology, Physiological and Medical Meteorology, Hydrological Meteorology, Aeronautical Meteorology, Military Meteorology, and Commercial Meteorology. Each of these is capable of furnishing ample occupation for a large group of specialists and offers or soon will offer remunerative careers to those who specialize therein. Thus with respect to the last three in the list, which were the latest to crystallize. Large aircraft concerns now have their own meteorological staffs; meteorological units have become a regular feature of armies; and a few "consulting meteorologists" already find employment in providing data of weather and climate for the use of business and industrial enterprises. The first formal treatise on agricultural meteorology that lives up to its title, written by J. Warren Smith, of the United States Weather Bureau, was published late in 1920. Physiological meteorology has lately attracted much attention. The "katathermometer" (a special form of dry-and-wet-bulb thermometer) for measuring the cooling effect of the atmosphere upon the human body, devised by Prof. Leonard Hill, has been the subject of considerable literature. Hill, in England, Ellsworth Huntington, in this country, and Griffith Taylor, in Australia, are blazing new trails in the important border science between physiology and medicine on the one hand and meteorology and climatology on the other. A symposium on this subject was a feature of the annual meeting of the American Meteorological Society in Chicago, December, 1920.

Organized meteorology is still in process of adjusting itself to the changes in human affairs arising from the war. The world-wide interchange of telegraphic weather reports has generally been resumed, but with the improvements that such reports are now, especially in Europe, largely distributed by radio-telegraphy and are more frequent and detailed than in the former epoch. Even Soviet Russia has been broadcasting, by wireless from Moscow, daily weather reports from a group of stations. Arrangements were made during the year to extend the European weather maps far to the northward by including reports from Jan Mayen, and plans were also set on foot to obtain radio weather reports from Greenland.

The most important advance in the organization of meteorology during 1920 was the establishment by Dr. O. L. Fassig of a general climatological service in the West Indies, under the direction of the United States Weather Bureau, with headquarters at San Juan, P. R. Although meteorological observations have been taken for years at hundreds of places in the West Indies, the stations have been maintained by a multitude of local authorities and the results have mostly been published in a very fragmentary way and in widely scattered documents (such as the blue books of the various British colonies, etc.). The new organization will comprise upwards of 400 stations, most of which already exist, and all their data will be published, according to a uniform plan, in a single monthly or quarterly report. Probably a number of stations on the adjacent continental coasts will eventually be included in this *réseau*.

The Czecho-Slovak Republic has established a meteorological service, with headquarters at

Prague, under the direction of Dr. Rudolph Schneider. The meteorological service of Roumania, which some years ago was relegated to a minor rôle as a branch of the astronomical observatory in Bucharest, has now, to the great satisfaction of meteorologists, resumed an independent status. In Germany, which has hitherto labored under the disadvantage of having a number of mutually independent meteorological establishments, a *Reichsausschuss* has been appointed to coördinate the work of these institutions and enlarge the practical weather service. Dr. Gustav Hellmann, director of the Prussian Meteorological Institute, is president of this new central committee, which proposes to maintain a number of stations, open day and night, for the interchange of wireless weather reports. An extensive *réseau* of meteorological stations has been established in Ecuador by the *Asociación de Agricultores del Ecuador*, with headquarters at Guayaquil. The meteorological service of Brazil has been reorganized and much enlarged by Senor J. de Sampaio Ferraz, and will hereafter include in a single system the previously independent provincial services of that country. New meteorological services, on a tentative scale, are in operation in Venezuela and the Dominion Republic.

In contrast to these hopeful undertakings, most discouraging reports have come from Vienna concerning the affairs of the *Zentralanstalt für Meteorologie und Geodynamik*, the official meteorological service of Austria, and one of the oldest and most fruitful institutions of its kind in the world. In common with the representatives of other sciences in Austria, the Viennese meteorologists have been reduced to dire extremities by the monetary situation in their country, and during the year were forced to appeal for aid to their colleagues in other countries to save them from starvation. Dr. Max Margules, who, before he retired from meteorological work some years ago, was perhaps the foremost contributor to dynamic meteorology in the world, actually starved to death, but partly because he was living in strict seclusion and declined proffered aid. Food drafts were sent to the *Zentralanstalt* by the American Meteorological Society, and help was also provided from other sources in America and Europe. In December, 1920, the *Zentralanstalt* issued a circular, signed by the world-renowned meteorologist, J. Hann, former director, and by F. M. Exner, present director, indicating that the collapse of the institution was at hand, unless financial aid could be secured from abroad.

An international congress of meteorologists was held in Venice at the end of September under the auspices of the Italian Meteorological Society. This meeting had no connection with the series of congresses, conferences, and committee and commission meetings that have been held during the past half-century by the representatives of the official meteorological services of the world. On the other hand, the Commission on Weather Telegraphy, which is under the official International Meteorological Organization, held a meeting in London November 22-27. At the latter meeting a new code was adopted for the interchange of weather telegrams, and one for weather reports from ships, and a schedule was drawn up indicating the hours at which collective reports of meteorological observations are to be sent out from high-power wireless stations in the different countries of Europe. The new

international weather code, which is much more elaborate than the one used before the war, is to come into general use in Europe by Jan. 1, 1922, but each country is asked to begin its use as long before that date as practicable.

The meteorological services of the Americas are not yet participating in the general interchange of weather reports by wireless that prevails in the Old World, but it seems inevitable that, in a few years, all countries will be linked up in this system of reports. In the meantime, the United States Weather Bureau has inaugurated a system of wireless weather reports for the benefit of mariners in the western part of the North Atlantic Ocean. Reports of the winds and barometric pressure observed at a large number of stations in the eastern United States and the West Indies at 8 P. M., 75th meridian time, are broadcast at specified hours in the evening from the Naval radio stations at Arlington, Key West, Point Isabel, Tex., Great Lakes, Ill., and San Juan, Porto Rico. The Bureau has supplied ships with base-maps on which these data may be charted, so that such ships are now in a position to draw their own weather maps each evening. Besides the reports of observations, these wireless bulletins contain forecasts and information concerning the location and movements of storms, etc. This service was begun Nov. 20, 1920. A similar service is projected for the Pacific Ocean.

During the summer of 1920 the Weather Bureau carried out a series of upper-air observations in and about the West Indies with a view to obtaining further knowledge of West Indian hurricanes. Another line of attack upon the problem of forecasting the movements of these tropical storms was marked out by Dr. I. M. Cline in a paper published in the *Monthly Weather Review* (Wash., D. C.) for March, 1920. Dr. Cline finds that as hurricanes approach our coasts, the waves spreading out in advance of the storm produce abnormal tide-levels, observations of which at several points furnish useful indications of the location and movements of the storm. In accordance with Dr. Cline's suggestions, Weather Bureau stations on the southern coasts of the United States reported all abnormal tides by telegraph throughout the hurricane season of 1920.

Meteorologists have been watching with much interest the development of new methods of forecasting by Prof. V. Bjerknes and his associates, J. Bjerknes, H. Solberg, and T. Bergeron, at Bergen, Norway. The Bergen meteorologists find that there is a well-marked surface of discontinuity (called the *polar front*) between the warm air blowing from low latitudes and the cold air of polar origin, and that the cyclones of the temperate zone follow one another along this line, "like pearls on a string." The contrast in temperature and humidity between the masses of air lying on either side of the line, together with the vertical movements of the conflicting polar and tropical currents, leads to the formation of cloud, fog, and rain. In fact, cyclones, with their attendant weather phenomena, appear to be episodes of the wavy and undulating polar front, extending around the globe, while anti-cyclones are explained as tongues of polar air that have pushed too far south and have been cut off by the intrusion of warm air to the northward of them. (*Nature*, June 24, 1920. *Meteorological Mag.*, Sept., 1920.) To a certain extent

these ideas are an interesting revival of the views of H. W. Dove, which prevailed in meteorological circles before the middle of the nineteenth century. Dove similarly attributed the weather changes of the middle latitudes to a conflict between equatorial and polar air currents.

Some prominence has lately been attained by the views of A. Schmauss, in Germany, and others to the effect that examples of colloidal phenomena may be found in the behavior of moisture and suspended dust in the atmosphere.

The number of condensation nuclei in a given volume of air is so great that it has not been clear how the drops formed on each of them could grow to such a size as to fall as raindrops. Dr. W. J. Humphreys, of the Weather Bureau, in his new *Physics of the Air*, has suggested that the small droplets first formed in an ascending current of humid air filtered out most of the nuclei, so that the number of the latter rising to higher levels is small enough to permit the formation of drops of "falling" size at such levels.

Prof. Carl Störmer, of the University of Christiania, Norway, has enlarged his remarkable work in taking simultaneous photographs of the aurora from different stations until he now has seven such stations in operation. They are connected with one another by telephone, and their distances apart, ranging from 26 to 89 kilometers, provide base-lines large enough to ensure the accurate determination of the actual positions in space of auroral features by the photogrammetric method. During the splendid auroral displays of March 22-23, 1920, observed very widely in both Europe and North America, Störmer secured photographs of streamers extending up to the unprecedented altitude of 500 kilometers (310 miles). A map showing the horizontal distribution of this aurora over the United States was published by Brooks and Lyman in the *Monthly Weather Review* (Washington, D. C.) for July, 1920.

Sir Napier Shaw has retired from the directorship of the British Meteorological Office, and has been succeeded by Dr. G. C. Simpson. Shaw remains, however, at the head of the International Meteorological Committee. Prof. K. Nakamura, director of the meteorological service of Japan, retired at the end of 1920 and was succeeded by Prof. T. Okada.

Among the well-known meteorologists who died during the year were: Dr. Max Margules, of Vienna; Alexander Freiherr von Danckelman, a leading contributor to the climatology of Germany's former colonies; and Alexander Supan, of Breslau, physical geographer, climatologist and former editor of *Petermanns Mitteilungen*. Gen. M. A. Rykachev, retired director of the Russian meteorological service, is reported to have died in Petersburg late in 1919.

Two new meteorological journals were launched in 1920: viz, the *Bulletin of the American Meteorological Society* (Washington, D. C.) and *La Meteorologia Pratica*, published bi-monthly at the Osservatorio di Montecassino, Italy. Meteorological books published during the year include W. J. Humphreys, *Physics of the Air* (Phila.), J. W. Smith, *Agricultural Meteorology* (N. Y.); Griffith Taylor, *Australian Meteorology* (Oxford); R. K. G. Lempfert, *Meteorology* (London); F. D. Young, *Frost and the Prevention of Damage by It* (Washington, D. C., U. S. Dept. of Agriculture).

METHODIST EPISCOPAL CHURCH.

Statistics for 1920 show this denomination had 3,944,911 full members on roll, 286,227 non-resident members, making a total with preparatory members of 4,392,520 members, with 18,575 ministers in full connection and 1847 on trial and 14,505 local preachers. The above figures include missions in foreign countries. The church property included 29,854 buildings with an estimated value of land and buildings of \$255,718,293. The parsonages numbered 15,495, with an estimated value of land and buildings of \$46,194,086. Sunday schools numbered are 35,668, with total enrollment in all departments of 4,338,523 pupils and 391,604 officers and teachers. The Epworth League reports show 508,027 senior members and 218,415 junior members. This denomination has affiliations with churches in Denmark, Finland, Korea, North China, North Germany, Norway, South Germany, Sweden, Switzerland. The Mission Conferences were held in Austria, Bulgaria, and Sweden. The second largest in the United States, this denomination has many branches. Statistics for many of these will be found under their separate headings.

Statistics for the United States for 1920 show that this denomination had 2,262,247 full members on roll, 173,303 non-resident members, total membership of 2,333,224. There were 9996 ministers in full connection and 1004 on trial and 4105 local preachers. Church buildings numbered 16,269 with total estimated value of land and buildings of \$146,546,668. Parsonages numbered 8264 with estimated value of land and buildings of \$26,160,243. Sunday schools numbered 15,715 with a total enrollment of 2,419,921 with 225,317 officers and teachers. Epworth League reports showed 256,534 senior members and 84,982 junior members.

Missionary work was carried on in Africa, China, Japan, Korea, Malaysia, Philippine Islands, India, South America, and Mexico. This work is carried on by the Board of Foreign Missions and the Woman's Foreign Missionary Society. Total receipts for foreign country work were: \$5,352,973 for the year ending Jan. 1, 1920, of \$1.28 per capita. Report of the Board of Foreign Missions, 1920, showed 1049 missionaries and the Woman's Missionary Society showed 559 workers, besides 84 for foreign workers making a total of 2741 missionaries. Native workers numbered 14,430. There were 235,530 full members and 259,601 probationers, making a total of 505,131.

Reports of education in the foreign field showed 12 colleges or universities with 2373 students. Theological and Bible Schools numbered 65 with 1786 students. High schools numbered 102 with 15,773 students. Elementary schools numbered 2726 with a total under instruction of 100,415. Sunday schools numbered 9267; total enrollment of 405,246. Estimated value of churches and chapels was \$9,149,362, or adding schools and hospitals, etc., a total valuation of \$17,001,697. Total contributions in the foreign field were \$1,849,026.

The Centenary Conservation Committee carried on the work of the centenary campaign during 1920 with unequalled success. At the close of the financial campaign of 1919, \$112,000,000 was pledged. During the year which followed, the amount of pledges was raised over \$3,000,000, so that the complete amount of centenary pledges is now more than \$115,000,000. The cost of the

campaign is estimated not to exceed 4 per cent of the amount collected. During the year \$700,000 was given for the relief of starving women and children. A share was taken in the rebuilding of 31 villages in the Marne Region of France on which \$100,000,000 was spent. Over half a million dollars was spent in evangelistic work and church building in all the countries of Europe; \$250,000 was spent on orphanages, homes and industrial schools in which to care for orphans and others ruined by the war. Three hospital schools were established in Africa. Mass movement was carried on in India where \$6,438,882 was promised for the furtherance of Christianity in that country. Thirty new missionaries were sent to Latin America and work was begun in Costa Rica and continued in a number of other countries down there. Reports show that the "first and most important effect of the centenary at home has been the awakening of hundreds of churches that were asleep." Over \$250,000 was spent in helping soldiers and sailors resume their educational work where the war broke it off, or enabling men to begin college work. Other appropriations were made to carry on work in industrial centres, caring for negroes who have come to the North, Americanization on a Christian basis, work among students and State colleges and universities, building churches and supplementing the equipment and making more efficient the work of our army and navy chaplains.

Home missionary work is carried on by the Board of Home Missions and Church Extension. Total receipts by the Board were \$9,003,300. The work is divided up into different departments; the Department of Church Extension, an important sub-division of which is the Bureau of Architecture (over 2000 requests for help was received since the establishment of the bureau in 1919); Department of City Work through which a large number of city societies have been organized; Department of Rural Work which offered the following plan for its future work: (1) to study conditions affecting the welfare of the rural church, (2) to develop a programme of education to promote leadership in the rural church, (3) to organize the rural work for the more efficient administration of missionary funds and (4) to establish "demonstration" work in selecting places to stimulate a more effective rural service and for working out methods of church work; Department of Frontier Work, where special attention has been given during the past year to work among the Indians; Department of Evangelism, which aims to add a million communicants to the church in the future; the Bureau of Foreign Speaking Work which conducts English Speaking Conferences among foreigners in 533 centres and Foreign Speaking Conferences in 422 centres. Among the languages used are: Armenian, Chinese, Jewish, Japanese, Swedish, Slav, and a number of others.

Reports from conferences on ministerial support showed an increase in 1920 in the salaries of pastors and district superintendents. For the 15,791 pastoral charges, there was received \$21,346,011 for their support, or an average of \$1351.78 per pastor.

The General Conference of 1920 met in Des Moines, Iowa, on May 1, Bishop Berry presiding. Dr. Edmund M. Mills was elected secretary, and the roll call showed more than 800 delegates

present. The Conference assigned 38 bishops to residences, 21 in the United States, 2 in Latin America, 2 in Africa, 3 in Europe, and 10 in Asia. Japan and Korea were constituted an episcopal area.

The educational work is carried on by the Board of Education which stands in a supervisory relation to 42 universities and colleges, seven professional graduate schools, 34 secondary schools, and 18 institutions for negroes. Total endowment of these institutions in 1920 was about \$41,000,000, with a total income of about \$7,000,000. Among the universities the most important are: DePauw University, Indiana; Northwestern University, Illinois; University of South California; Ohio Wesleyan University; Boston University, and Wesleyan University. The board maintains a Student Loan Fund to help students complete their courses in various institutions. This fund did much work during 1920. The church also maintains 89 deaconess homes, 24 deaconess hospitals, and 10 deaconess training schools. Besides these are 51 regular hospitals, 39 children's welfare institutions, and 39 homes for the aged. All periodicals are published by the Methodist Book Concern, 150 Fifth Avenue, New York City. Branch offices are maintained in Boston, Pittsburgh, Detroit, Cincinnati, Chicago, Kansas City, and San Francisco.

METHODIST EPISCOPAL CHURCH.

SOUTH. Statistics for 1920 show for this denomination 2,172,088 members; traveling preachers numbered 7623; local preachers numbered 4801; Sunday school pupils numbered 1,608,670, with 142,390 officers and teachers; Epworth League membership was 119,331; church buildings numbered 17,061 at an estimated value of \$75,982,955; parsonages numbered 5580 with an estimated value of \$15,288,215. The above figures show a slight difference from those of 1919. Missions are maintained in Brazil, Central Mexico, China, Cuba, Korea, Mexican Border, and Pacific Mexico. The denomination is divided into 50 conferences and 350 districts for purposes of administration. The College of Bishops is composed of 19 ministers from all parts of the South and Southwest, comprising the executive body of the church. The *Methodist Review* and the *Christian Advocate* are the principal periodicals. Educational, missionary, and relief work is carried on by committees appointed by the College of Bishops.

METHODISTS, CANADIAN. This denomination is a union which took place in 1883 of the Methodist Episcopal Church, the Wesleyan Methodist Church, the Primitive Methodist Church, the Methodist New Connection Church, and the Bible Christian Church. The union took place because of the similar beliefs of the five separate churches, and much better work was found possible by coöperation. Besides the Dominion of Canada and Newfoundland there are churches in Bermuda that are affiliated with this denomination. Canada is divided into 12 conferences which are further subdivided into many districts for the purpose of administration and organization. The conferences are as follows: Toronto, London, Hamilton, Bay of Quinte, Montreal, Nova Scotia, New Brunswick, Prince Edward Island, Newfoundland, Manitoba, Saskatchewan, Alberta, and British Columbia.

Reports for 1920 show a total membership of 395,653, including probationers; 2227 regularly

ordained ministers; 380 ministers on probation, 3745 churches; Sunday schools numbered 3883 with 456,302 pupils and 41,508 officers and teachers. In the Young Peoples' Societies there were 2896 active organizations. The above figures show a slight increase over 1919. Educational work is carried on by a board of education, which has supervision over 17 colleges and universities, the most important of which are: Victorian University, in Toronto; Mt. Allison University in Sackville, N. B.; Wesleyan Theological College in Montreal, and Wesley College in Winnipeg. The *Christian Guardian* is the principal periodical published by the denomination.

METHODISTS, COLORED. The only available statistics for colored Methodists are those of 1919. At that time there were 267,361 members and probationers; ordained ministers numbered 3402; lay preachers numbered 2786; church buildings numbered 3485; Sunday schools numbered 4007 with 76,876 pupils and 7008 officers and teachers. Originally this denomination was a part of the Methodist Episcopal Church, South.

METHODISTS, WESLEYAN. This denomination is the principal Methodist branch in Great Britain and Ireland. Statistics for 1920 show 862,808 communicants for Great Britain. Other statistics are those of 1919, the latest available. In Great Britain there were: 485,533 members and probationers; 2594 ordained ministers; 18,618 lay preachers; 8528 churches; 7364 Sunday schools with 860,334 pupils and 125,663 officers and teachers. In Ireland there were 27,226 members and probationers; 258 ordained ministers; 622 lay preachers; 488 churches; 329 Sunday schools with 21,930 pupils and 2149 officers and teachers. Foreign missions had 204,719 members and probationers; 632 ordained ministers; 8107 lay preachers; 3707 churches; 2351 Sunday schools with 142,403 pupils and 9168 officers and teachers. The French Conference reported 1433 members, 31 ministers, and 62 churches. The South African Conference reported 143,897 members and probationers; 294 ordained ministers; 4627 lay preachers; 4280 churches; 904 Sunday schools with 42,582 pupils and 3106 officers and teachers. These latter figures show marked progress during the year.

PRIMITIVE METHODIST CHURCH. Statistics for 1920 show 206,038 communicants for Great Britain. There were in 1919 in this denomination 206,035 members and probationers; 1093 ordained ministers; 14,602 lay preachers; 4798 churches; 4019 Sunday schools with 416,937 pupils, and 56,124 officers and teachers.

UNITED METHODIST CHURCH. Statistics for 1920 show 182,344 communicants for Great Britain. There were in 1919 in this denomination 182,344 members and probationers; 734 ordained ministers; 5919 lay preachers; 3090 churches; 2239 Sunday schools with 271,245 pupils and 37,611 officers and teachers.

WESLEYAN REFORM UNION CHURCH. Statistics for 1920 show 8671 communicants for Great Britain. There were in 1919 in this denomination 8671 members and probationers; 26 ordained ministers; 423 lay preachers; 213 churches; 190 Sunday schools with 13,950 pupils and 2475 officers and teachers. The above figures show a marked loss over the corresponding figures for 1918.

INDEPENDENT METHODIST CHURCH. Statistics for 1920 show 9621 communicants for Great Britain. There were in 1919 in this denomina-

tion 9621 members and probationers; 378 ministers; 146 churches; 159 Sunday schools with 25,432 pupils and 2945 officers and teachers.

AUSTRALASIA METHODIST CHURCH. Statistics for 1920 show 179,215 communicants for Australasia. There were in 1919 in this denomination 179,215 members and probationers; 1102 ordained ministers; 9074 lay preachers; 4450 churches; 4000 Sunday schools with 210,000 pupils and 25,578 officers and teachers.

NEW ZEALAND METHODIST CHURCH. Statistics for 1920 show 25,180 communicants for New Zealand. There were in 1919 in this denomination 25,180 members and probationers; 181 ordained ministers; 925 lay preachers; 468 churches; 422 Sunday schools with 29,035 pupils and 3162 officers and teachers.

JAPAN METHODIST CHURCH. According to the latest available statistics (1918) there were in this denomination 15,364 members and probationers; 241 ministers; 245 churches; 340 Sunday schools with 28,438 pupils and teachers.

Methodism is also represented in the following countries, the figures being the latest available membership: Austria-Hungary, 955; Bulgaria, 601; Denmark, 4092; Finland, 1611; France, 507; Italy, 4132; North Germany, 14,760; Norway, 6132; Russia Mission, 452; South Germany, 14,005; Sweden, 16,454; Switzerland, 10,597.

World figures for Methodist communicants show that in America there are 8,358,230; in Great Britain and Australasia, 1,473,877; making a grand total of 9,832,107 as against 8,768,616 in 1910, an increase of over 1,000,000 during that nine years. An estimate of the Methodist population in the world shows in the Western Section, members, probationers, and adherents, 24,253,805; in the Eastern Section, 7,369,385, making a grand total for the world of 36,622,190 as against 32,728,547 in 1910, or an increase of 4,000,000 persons. See also **WESLEYAN METHODIST CONNECTION IN AMERICA.**

METRIC SYSTEM. The movement for the establishment of the International Metric System as the single system and standards for weights and measures in the United States continued during 1920. Over 100,000 petitions were sent to the United States government at Washington urging this step both by individuals and by organizations. A World Metric Standardization conference was held in San Francisco on May 17, 1920, after the Seventh National Foreign Trade Convention, which was attended by over 500 representatives of commerce, science, and various professions and industries. In March, 1920, the City Council of Chicago, Illinois, unanimously adopted a resolution urging that the United States and the British Empire make the Metric weights and measures the exclusively legal standard for the respective nations. In January, 1920, the second Pan American Financial Congress meeting at Washington, D. C., passed resolutions urging the adoption at the earliest possible moment of the Metric System by the United States. In December, 1920, bills were introduced in the Senate and House of Representatives respectively, by Senator Joseph S. Frelinghuysen and Representative Fred A. Britten, providing that 10 years after the passage of the act the weights and measures of the Metric System should be the single standard of weights and measures in the United States of America and the international stand-

ards should be the underlying and fundamental standards. The bills provided that from four years after the passage of the act no person should make any weight or measure or weighing or measuring device except according to the Metric System. The use of other weights and measures in trade or commerce would be illegal after 10 years and before that time all postage, excises, duties, and customs, must be charged and collected on a Metric basis. These bills naturally were not acted upon by the close of the year, but received the approval of those interested in metrological reforms along the lines of the Metric System.

Much interest was aroused among metrologists by the award of the Nobel Prize in Physics to Chas. Edward Guillaume (q.v.), director of the International Bureau of Weights and measures and one of the foremost metrologists of the world.

The American Metric Association held its annual meeting in New York and Chicago on December 27 and 30, to listen to numerous papers and reports on the progress of the use of the Metric System in the United States.

METROPOLITAN OPERA HOUSE. See MUSIC. *Opera.*

METTEY, ANDRE. French expert in pottery; regarded as one of the masters of the modern art of pottery, died at Asnières April 2. He was born in 1861. He came into public notice in 1911 with a series of remarkable works in varnished clay; in the following year he exhibited some excellent porcelains, and in 1913 some works decorated in an entirely new style, adding greatly to his reputation as a ceramist. He had made an especial research for many years for the purpose of discovering luminous red shades and was finally successful in 1919. His enamelled works in red and blue on a gold base were described as particularly effective. He was born at Laigues, and acquired his skill without any technical education, and simply by observation of the great works of the past.

MEXICO. A federal republic lying to the south of the United States and to the north of Central America. Capital, Mexico, situated in the Federal District.

AREA AND POPULATION. The country is divided for administrative purposes into 28 states, the Federal District, and two territories. Area, estimated at 767,198 square miles, or 25.25 per cent of the area of the United States; population according to the census of 1910, 15,115,612; estimated, 1912, 15,501,684. Chief cities with their populations in 1910: Mexico, 571,066; Guadalajara, 119,468; Puebla, 96,121; Monterey, 73,528; San Luis Potosi, 68,022; Merida, 62,447; and Leon, 57,722.

PRODUCTION. The country is well adapted to agriculture, having an abundance of fertile soil and, owing to the varying altitude, the products of temperate, tropical, and semi-tropical zones are often found within a comparatively small radius. The chief products have been corn, cotton, henequin, wheat, coffee, and beans, and there is also a considerable production of sugar, molasses, and spirits. Statistics published in 1920 showed that there were in the Mexican Republic 8,466,643 head of live stock, distributed as follows: Cattle, 2,162,984; horses, 929,385; mules, 354,351; asses, 287,989; sheep, 1,089,976; goats, 1,987,869; and hogs, 1,654,089.

Of late years attention has been especially directed to the oil resources which are very exten-

sive and which have been exploited by foreign capital. The change of government policy in respect to oil and other concessions to foreigners caused much complaint abroad, especially in the United States. (See preceding YEAR BOOK), and the difficulty continued during 1920. (See below). In respect to other mineral products, the United States Bureau of Domestic and Foreign Commerce supplied the following information based on official Mexican sources in 1920.

The following table gives the production of 1916, 1917, 1918, and 1919 (January to September), quantities being stated in kilos of 2.204 pounds each:

<i>Metals</i>	1918 <i>Kilos</i>	1919 <i>Kilos</i>
Gold	25,313	22,944
Silver	1,944,542	1,949,673
Copper	70,223,454	50,893,612
Lead	98,837,154	67,378,353
Zinc	20,698,995	8,665,413
Antimony	3,268,546	627,704
Tin	13,537	2,117
Tungsten	149,486	29,292
Molybdenum	27,371	2,856
Manganese	2,878,383	2,849,979
Mercury	163,598	113,865
Arsenic	1,881,011	2,188,333
Amorphous graphite	6,190,819	5,011,619

According to the *Pan-American Union* the silver output of Mexico in 1919 was estimated at 75,000,000 Troy ounces, or 6,000,000 ounces more than the combined production of the United States and Canada. Mexico occupied the first place in the silver production of the world.

The total output of petroleum in Mexico in 1919 was 92,402,055 barrels, or 27,797,433 barrels more than in 1918. The principal centres of production were, in barrels, as follows: Southern fields, 72,656,713; Panuco, 16,808,435; Topila, 1,348,769; and Ebano and other districts, 1,588,138. The exports during the year referred to totalled 80,701,780 barrels. The exports of asphalt during the period referred to amounted to 19,075 barrels, all of which went to the United States. The domestic consumption of petroleum in 1919 was 16,696,407 barrels, as compared with 14,000,000 barrels in 1918. Official figures in 1920 showed that Mexico had 1103 petroleum wells, many of which were not being worked. The daily potential production was estimated at 1,995,220 barrels, and the daily actual production at 220,825 barrels. New wells to the number of 123 were being drilled.

The United States Bureau of Foreign and Domestic Commerce in 1920 gave out the following data of general industrial conditions in 1919: Manufacturing was carried on in the following lines: Mining and smelting, cotton, clothing, pottery, breweries, foundries, rebozos, rugs, zarapes, hats, basketry, cigars and cigarettes, sugar, flour, bagging, twine, soap, leather, shoes, paper, iron and steel works, electric light and power. While no manufacturing is carried on on a large scale in Mexico, except mining and smelting, it is well distributed throughout the country and gives employment to many people. Primitive methods are followed in many of the industries, especially in the making of rugs, zarapes, rebozos, pottery, and basketry, which in general are carried on in the homes of the workmen. One manifestation of an awakened spirit in the peon class has been a steady exodus of laborers with their families to the United States during 1918 and 1919. This movement by March, 1920, had assumed such

importance as an economic problem that the government was concerning itself in ameliorating industrial conditions in favor of this class of people. The attention given to mining industry, following a policy of conservation in 1917 rather than one of extension, settled more definitely into regular production for profit in 1918, broadening out in 1919 into a policy looking also to future development. The rise in silver was a great stimulus to mining in the latter part of 1919. Actual production was hampered by the lack of transportation facilities, the difficulty in obtaining fuel being an especially serious problem. Commercial facilities offered by banks during the past four years were restricted throughout the country by governmental intervention. Makeshift expedients were resorted to for buying and selling domestic exchange, leading merchants generally taking the place of the usual bank correspondents in different commercial centres. During the latter part of 1919, the facilities of the *Comision Monetaria*, a governmental agency established in 1905 for handling public moneys, came into fairly general use for exchange purposes, as it had regular branches in the principal cities of Mexico. The salient factor of industrial progress in Mexico in 1919 was the sufficient restraint of banditry throughout the Republic to permit a general return to industry, except in limited areas. In no part of the country did the outlaws extend their operations, their depredations being limited to raids. Railway lines previously in regular operation have been maintained, subject to less and less interruption, and regular service has been resumed on lines where service had been suspended or subject to frequent interruption. Agricultural districts easily accessible to lines of communication have correspondingly been delivered from bandit interference, and people have returned to cultivation of the soil, except in remote districts.

COMMERCE. The imports of the country immediately responded to renewed purchasing power of Mexican money which manifested itself early in the year 1919. The release of commodities by the United States War Trade Board was followed by orders from Mexican merchants whose stocks had become depleted. At first orders were only to replenish goods sufficiently for immediate demands, falling prices being anticipated. The most significant imports demanded were plows and other agricultural implements. These were for immediate use and were ordered in large quantities, indicating a condition of comparative security in agricultural districts. Of other lines of merchandise imported, the most important were wearing apparel, foodstuffs, textiles, drugs and chemicals, mining supplies, hardware, electrical equipment, and household utensils. Practically all came from the United States. While buying was not heavy, it was fairly steady, increasing beyond the ability of American manufacturers to deliver and far beyond what the transportation facilities of the country could handle. The principal exports during the year were animal products (hides, skins, and bones), mineral products, petroleum, fibres, lumber, basketry, earthenware, and chicle. Practically all of the exports went to the United States. The most notable increases in exports were of cotton, coffee, broomroot, vanilla beans, chicle, fertilizer (bat guano), linseed-oil, bananas, twine, indigo, cigarettes, baskets, garlic, and pottery.

RAILWAYS. The principal railway systems were formed into one corporation in 1909 under the name of the National Railways of Mexico and after 1914 this corporation was taken over by the government which operated it along with nearly all the private lines under the name of the Constitutionalist's Railways of Mexico. The National Railways of Mexico owned 6818 miles of track and controlled besides about 1220 miles. On the National Railways of Mexico there was an appreciable amount of new construction during 1920; track was laid between Durango, Mexico, and the port of Mazatlan, a distance of 21.13 miles; and also between Cuatro Ciénegas and Sierra Mojada, state of Coahuila, a distance of 39.77 miles. In addition there was being built from Durango, state of Durango, to the port of Mazatlan, on the Pacific coast, 250 miles, with 87 miles from Durango completed; from Cuatro Ciénegas to Sierra Mojada, state of Coahuila, 99.42 miles, with track completed on about 76 miles; between Allende and Las Vacas, state of Coahuila, 75.80 miles; this would connect at Del Rio, Texas, with the Southern Pacific; from Empalme Purísima on the Durango-Mazatlan line to Las Animas, 31 miles, of which 19 miles had been completed. There was also building during the year a new station in Durango to cost \$250,000, of which by December the masonry and concrete work was completed. There was grade reduction under way from Saltillo to Carneros, 34 miles, while the new passenger station at Saltillo, was nearing completion.

PUBLIC DEBT. On June 30, 1920, the public debt of Mexico was 657,599,122 pesos distributed as follows: Public internal and foreign indebtedness and the interest on the debts of the states guaranteed by the Federal government, 545,009,457 pesos; interest on the gold bonds of the general mortgage of the National Railroads, 24,359,316 pesos; interest on the gold bonds of the *Caja de Prestamo* (Loan Bank) for irrigation and agricultural development up to May 31, 1920, 14,662,323 pesos; debts due the banks for the attachment of reserve coin, 53,701,851 pesos; obligation of the internal debt effective, 19,866,175 pesos.

GOVERNMENT. Under the constitution promulgated Feb. 5, 1917 (for the main provisions of which see 1917 and 1918 YEAR BOOKS), Mexico was proclaimed a federative republic. The legislative power is vested in a Congress of two houses, the House of Representatives and the Senate, members of both being elected by universal suffrage. The executive power is in a president elected by direct popular vote for four years. Under the President is a cabinet of seven secretaries of state, namely: Foreign Affairs; Interior, Finance and Public Credit; War and Marine; Communications; Public works; and industry and commerce. There are also three departments of state, namely, Judicial, Educational, and Public Health. At the beginning of 1920, the President was General Carranza, but in the spring of that year civil war broke out and he fled from the capital and was assassinated. In May Adolfo de la Huerta was elected provisional president, and in December after the general elections, General Obregón who had been elected was inaugurated president. See below, under *History*.

HISTORY

SONORA REVOLT. While the presidential campaign was going on in Mexico, Sonora, next to

Chihuahua the largest state in the republic, declared in April its secession, and its Legislature chose as the supreme authority of the new state, its governor, de la Huerta. Among the grievances were the alleged partiality of President Carranza in the electoral campaign, and a disagreement arising over the Southern Pacific Railroad of Mexico. A serious strike had been ordered on that road, in spite of an injunction of the Federal Court. The Federal government, April 6, threatened to take control of the road unless the matter was settled by April 9. The Government of Sonora seized the road and began its operation by employing the strikers, promising to grant their terms. The revolt spread in spite of President Carranza's measures to suppress it, and became general through the country before the end of April. On April 23d, the revolutionists proclaimed a new provisional government of Mexico under de la Huerta; and they demanded the repudiation of Carranza and the election of a provisional president. Generals Alvaro Obregon and Gonzales joined the revolutionary movement. Carranza now tried in vain to effect a compromise and on May 5th issued a manifesto likening the revolt to that of the former president, Huerta, and promising to make every effort for the protection of the state against the revolutionists. He said he would surrender office only when a successor had been legally chosen; and he called for loyal support and for additional troops. This was immediately followed, however, by the revolt of the Federal garrison at Vera Cruz. On May 7th Carranza secretly fled from the city of Mexico, escaping into the mountains of Jacapoxtla.

ASSASSINATION OF CARRANZA. It seems that he left the Federal district with three trains full of troops, but that the trains were halted a short distance southwest of San Marcos. There he attempted to resist the revolutionists who, however, outnumbered and surrounded his forces. After an obstinate resistance he succeeded on May 14th in breaking through the rebel lines and with about 150 soldiers turned north into the mountains apparently for the purpose of reaching the coast between Tampico and Vera Cruz. Soon afterwards he was met by a small body of troops under General Herrera. Carranza, at that time, had about 80 soldiers with him. General Herrera had surrendered to Carranza in March and the latter felt safe in entrusting himself to him, but on May 21st Herrera's men attacked the hut at the village of Tlascalantongo where Carranza was sleeping. Though some of the troops that accompanied him came to his assistance, it was too late; he had been killed. According to the accounts published at the time, the killing was entirely due to the treachery of General Herrera's forces. The version of General Herrera was entirely different. Appearing before a military court held at Mexico City, he declared that Carranza had committed suicide; but contradictions in his testimony were revealed and the prevailing belief during 1920 was as above indicated.

ELECTION OF PRESIDENT. On May 24th, when the body of the ex-President was buried, the Mexican Congress in extra session elected Adolfo de la Huerta, provisional president, by a vote of 224 to 30. The real power, however, remained in the hands of Gen. Alvaro Obregon, to whom meanwhile the other military leaders, with the exception of General Villa, had pledged their loyalty. Obregon became a candidate for presi-

dent and had practically no competitor. The elections appointed for July 4th were subsequently postponed to September. Meanwhile, Villa declared that he would oppose the new government.

THE OIL QUESTION. The oil difficulty centred around article 27 of the Mexican constitution adopted in 1917, which declares that the people in Mexico had a right to the soil and sub-soil resources and bestows on the government the power to regulate and safeguard these resources. According to the foreign oil companies, a policy of virtual confiscation has been carried on under cover of this clause; taxes of a prohibitory nature have been imposed, including a tax on potential production. In January, the American oil interests appealed to the United States government for protection, saying they were not permitted to drill new wells. In reply, the Mexican embassy declared that the capacity of the 310 oil producing wells in the country was 2,000,000 barrels a day, and that only 220,000 barrels were being extracted for exportation and home consumption, leaving a margin of 1,780,000 barrels a day, which could be drawn at will. The government denied that there was any shortage, except that for which the operators themselves were responsible. On January 17th President Carranza agreed to issue permits for drilling additional wells. Negotiations were undertaken in June with the new government. Representatives of the oil companies demanded the repeal of legislation in Article 27 and a return to the original regulations. Meanwhile the United States Senate sub-committee on foreign affairs had been concerned with the question and had taken a vast body of testimony. The chairman, Senator Fall, recommended the forcing of Mexico to change her constitution by the omission of Article 27, and to except Americans from the law forbidding foreigners to own Mexican land or sub-soil resources; also to permit Americans to serve as teachers or missionaries, etc. He proposed American intervention if Mexico refused to accede to these demands. There was much interest in the attitude of the president-elect, General Obregon. In an interview in the autumn before his inauguration, he gave it to be understood that he would not change the constitution at the demand of Americans and that Article 27 in regard to the ownership of Mexican resources by foreigners would remain, but he said a commission would be appointed to investigate the subject and that vested rights would be safeguarded. See the article MEXICO in preceding YEAR BOOKS.

PRESIDENT OBREGON. In the beginning of December, General Obregon was inaugurated as president. The ceremony was attended by several governors of American States and by many representative Americans living in Mexico. The new President was reputed to be generally popular. As a soldier of the revolution he won for himself a place among the most distinguished officers. He did not belong to the ruling class but was of humble origin, having worked his way up from the ranks of the people. With the business community he appeared to stand well; the comment upon him in the United States press was favorable; and it was believed that his government would soon be recognized by the government of this country.

From interviews with him before his inauguration, it appeared that his intention first was to

arrange for a settlement of the debt. The default of the government in the payment of interest on Mexican bonds held by foreigners was one of the reasons why the United States had postponed recognition of the new government. There was fear in the United States that the governments of Great Britain and France in which countries Mexican bonds were held might intervene. Another question was that of the railways. It was understood that the government would not return the national railways to private management, but would give stockholders a share in their control. As to the spread of Bolshevism, General Obregon said any attempts of foreign agitators in Mexico would be promptly suppressed. In the autumn he made a tour of the Mexican states and on October 6th visited Texas where he was received enthusiastically and where he made speeches in favor of the friendliest possible relations between the two governments.

RECOGNITION. In the latter part of the year the question whether the United States government should recognize the new Mexican government was before the public. On November 17th it was given out by the State Department that if Article 27 of the Mexican Constitution or the laws enacted under it were made retroactive, the American government must withhold recognition. This article pertained to the ownership of property in Mexico by foreigners. The State Department was actuated by the motive of protecting all legitimate interests of Americans in Mexico. At this time there was a great deal of industrial unrest in Mexico according to reports, especially in the neighborhood of Vera Cruz and Yucatan, where frequent strikes had occurred. A Mexican mission was sent to Washington in November for the purpose of suggesting the basis for an arrangement between the two countries and especially to procure the recognition by the United States of the Obregon régime, as the inauguration of General Obregon was approaching. The American Secretary of State on November 25th proposed to the Mexican representatives that a treaty should be formulated embodying the points agreed upon in the conferences between the United States government and the Mexican mission. The Secretary said that no doubt could be entertained of the high and enlightened purpose of the present Mexican government and favored the suggestions by the mission of joint arbitration of claims. Both parties agreed upon the principle that Article 27 of the Mexican constitution was not and should not be interpreted as retroactive.

DISORDERS. During the early part of the year there were acts of banditry including border raids and the capture of an American on a train which had been wrecked by the followers of Villa (March 4th). In the same month the Mexican Foreign Office declared that both Americans and Mexicans were involved in border raids. Meanwhile, testimony pertaining to Mexican outrages was being gathered in the United States by the Senate Foreign Relations sub-committee, under the chairmanship of Senator Fall of New Mexico. It was reported on November 18th that labor conditions in the State of Coahuila had made American residents unsafe and that American citizens and their families were leaving the city of Sabinas in large numbers and were returning to the United States. It was reported that the striking miners had seized the coal mines in that region including property of Americans. The

subject was giving the State Department much concern.

Much was said about the spread of Bolshevism throughout the country in 1920. A Communist Congress of the Mexican Proletariat was held in the city of Mexico, September 18, and its extremist members advocated violent measures. Red flags were displayed and violent speeches made in the course of a great workingmen's parade, September 26, in which three members of the Chamber of Deputies took part. Alleged Communists were said to have gained control of several towns in the state of Yucatan, where Soviet propaganda had been vigorously carried on. In general, however, more orderly conditions were reported than for many years past. The robbing of banks and passenger trains had been checked and while there were a few insurgent movements, they were on a small scale and presented no great danger. The revolutionary leader, Gen. Felix Diaz, surrendered to government troops at the beginning of October.

ECONOMIC SITUATION AT THE CLOSE OF THE YEAR. In the latter part of November and in December occasional reports came in of the closing of mines and smelters; the price of silver began to drop at an alarming rate; the cotton crop was less than normal, and part of it was sold at prices below cost of production. The prices obtained for sisal and other fibres and for hides were extremely low. Bank rates were raised, money became tight, and finally the Banking Company of Paris and Mexico went into the hands of receivers and the Mercantile Banking Corporation was obliged to close its doors. The ports were badly congested, the railways were hampered by lack of equipment, both suffering from the results of labor troubles. Unemployment began to appear and wages were lowered, but the cost of living, particularly rents, continued to increase. It was reported that a large number of silver, copper, lead, and iron mines had been compelled to close, throwing about 10,000 miners out of work. Government expenditures continued to exceed revenue. But in spite of these unfavorable features, there was much in the situation to inspire confidence. The attitude of the government was in favor of the establishment of sound conditions. A new banking law was promised, which was calculated to encourage investment in Mexico. The oil-fields were reported to be prosperous in spite of the port congestion. See **PETROLEUM**.

MIAMI CONSERVANCY DISTRICT AND FLOOD PROTECTION. See **FLOOD PROTECTION**.

MICHIE, J. COUTTS. See **PAINTING AND SCULPTURE**.

MICHIGAN. POPULATION. According to the preliminary report of the census of 1920, there were 3,668,412 residents in the State, Jan. 1, 1920, as compared with 2,810,173 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 196,647, a falling off of 5.0 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	1,625,000	65,000,000	\$53,800,000
	1919	1,625,000	65,000,000	89,700,000
Oats	1920	1,425,000	56,430,000	27,086,000
	1919	1,425,000	55,625,000	25,294,000

Crop	Year	Acreage	Produce, Bu.	Value
Rye	1920	660,000	9,702,000	12,618,000
	1919	900,000	13,500,000	17,280,000
Hay	1920	2,674,000	3,213,000	66,929,000
	1919	2,695,000	3,236,000	75,364,000
Potatoes	1920	340,000	85,700	82,844,000
	1919	310,000	27,900	37,665,000
Barley	1920	240,000	6,240,000	5,429,000
	1919	280,000	5,820,000	6,278,000
Wheat	1920	938,000	14,275,000	23,982,000
	1919	1,035,000	20,237,000	42,497,000

* Tons.

TRANSPORTATION. In 1920 the mileage of steam railroads in the State was 8898.47, and of electric railroads, 1558.74. The Michigan Public Utilities commission, created by act of the legislature of 1919, is vested with jurisdiction to fix rates and charges of all public utilities in the State, except passenger rates. Under the State constitution only the legislature can fix or alter passenger rates. But the commission cannot alter the rates of any public utility owned and operated by a city or village, nor can it alter the rates or charges fixed by any franchise granted by a city, village or township. However, any municipality, and any public utility operating within the limits of a municipality, whether such utility is operating under the terms of a franchise or otherwise, may join in submitting to the Commission any question involving the fixing or determination of rates, or the making of rules or conditions of service. In such cases the commission is empowered to fix such maximum and minimum rates and charges, and prescribe such rules and conditions of service, as shall be just and reasonable.

FINANCE. The total receipts of the State Treasury in 1920 were \$49,685,317, and the total disbursements \$49,515,776. Balance in State treasury, Dec. 31, 1920, \$3,069,973. Total State debt, \$10,500,000. The total amount of taxes levied in Michigan under the ad valorem general property tax for all purposes—State, county, school and municipal—was in 1919, \$110,776,000. For 1920 it was estimated as in excess of \$125,000,000. These amounts did not include taxes paid by public utility corporations into the primary school fund, or the automobile tax paid into the highway fund, or inheritance taxes, or mortgage taxes, the total of which for the year ending June 30, 1920, was \$14,771,746.

EDUCATION. The school population of the State was 937,330; the enrollment, 670,427; and the daily average attendance, 504,939. The number of teachers employed was 23,388 and the total amount of salaries paid, \$8,826,354. The total amount expended for educational purposes in the State was \$40,989,735, and the total disbursement for elementary and secondary education \$29,851,970.

CHARITIES AND CORRECTIONS. The State institutions with the number of inmates at the end of the fiscal year, June 30, 1920, was as follows:

INSTITUTIONS FOR THE INSANE	
Kalamazoo State Hospital.....	2,175
Pontiac State Hospital.....	1,493
Traverse City State Hospital.....	1,875
Newberry State Hospital.....	1,027
Ionia State Hospital.....	538

Total..... 7,107

PRISONS	
State Prison, Jackson.....	1,174
Michigan Reformatory, Ionia.....	608
Branch Prison, Marquette.....	375

Total..... 2,157

OTHER INSTITUTIONS

State Psychopathic Hospital.....	59
Michigan Home and Training School.....	1,633
Farm Colony for Epileptics.....	491
Industrial School for Boys.....	698
Industrial Home for Girls.....	288
State Public School.....	242
School for the Blind.....	158
Employment Institution for Blind.....	79
School for the Deaf.....	264
Soldiers' Home, Grand Rapids.....	563
State Sanatorium, Howell.....	186

ELECTIONS. The vote in the presidential election of November, 1920 was: Harding (Republican), 762,865; Cox (Democrat), 233,460; Debs (Socialist), 28,947; Farmer Labor, 10,372; Watkins (Prohibitionist), 9646; Socialist Labor, 2539; as compared with the following vote in 1916: Hughes (Republican), 337,952; Wilson (Democrat), 283,993; Benson (Socialist), 16,012; Hanly (Prohibitionist), 8085; Reimer (Socialist Labor), 831. The Republican candidate for governor was elected, receiving 762,865 votes. The thirteen members of Congress elected were all Republicans. The proposed amendment to the State constitution to abolish the parochial schools was defeated. The legislature elected in November was unanimously Republican in both branches, not a single Democrat, or candidate of any other party for the legislature, having been elected.

THE NEWBERRY CASE. On Jan. 27, 1920, the trial was begun in the United States District Court for the Western District of Michigan, sitting at Grand Rapids, Judge Clarence W. Sessions presiding, of Truman H. Newberry, United States Senator for Michigan, and 134 others on charges of violating nomination and election laws by the use of money in amounts beyond the limit fixed by the laws for the purpose of securing the nomination and election of Mr. Newberry to the Senate in 1918. The treasurer of the Newberry campaign committee in a sworn statement filed with the Secretary of the United States Senate as required by law, admitted that \$176,568 was used in the campaign to nominate Mr. Newberry. The Federal Grand Jury, at Grand Rapids, Nov. 29, 1919 indicted 135 including Senator Newberry. The trial—all being tried together—began at Grand Rapids, Jan. 27, 1920, before Judge Sessions with Frank C. Dailey of Indianapolis as chief government prosecutor. The jury was sworn, February 2. On March 2nd the government concluded its testimony, and on the same day the indictments against 23 of the respondents were dismissed on motion of the prosecution. On March 3rd Judge Sessions directed the jury to return a verdict of not guilty in the case of 15 others. The case against the rest of the defendants was submitted to the jury, March 19, and on the following day a verdict of guilty was returned against Senator Newberry and 16 others. Judge Sessions the same day pronounced the sentences. The 17 convicted and their sentences were: Roger M. Andrews, Menominee, publisher, eighteen months imprisonment; Elbert V. Chilson, Ann Arbor, manufacturer, one year and one day imprisonment; Frederick Cody, New York, insurance broker, two years imprisonment and \$10,000 fine; B. Frank Emery, Detroit, clerical worker, \$2000 fine; Richard H. Fletcher, Bay City, State Labor Commissioner, fifteen months imprisonment; Charles A. Floyd, Detroit, assistant campaign manager, two years imprisonment and \$5000 fine; Fred Henry, Flint deputy factory inspector, fifteen months imprisonment;

Hannibal A. Hopkins, St. Clair, publisher, one year and one day imprisonment; Paul H. King, Detroit, manager Newberry committee, two years imprisonment and \$10,000 fine; George S. Ladd, Sturbridge, Mass., good roads lecturer, \$1000 fine; James F. McGregor, Detroit, dealer in lodge regalia, fifteen months imprisonment; William J. Mickel, Oshkosh, Wis., Democratic politician, two years imprisonment; John S. Newberry, Detroit, capitalist, \$10,000 fine; Truman H. Newberry, Detroit, United States Senator, two years imprisonment and \$10,000 fine; Milton Oakman, Detroit, former clerk and sheriff, eighteen months imprisonment; Allan A. Templeton, Detroit, president Board of Commerce, eighteen months imprisonment; Harry O. Turner, Detroit, manufacturer's agent, \$2000 fine. All of the 17 convicted ones were released on bail in the sum of \$5000 each directly after sentence and an appeal was taken to the United States Supreme Court. The case had not been decided at the close of the year.

OFFICERS. Governor, Alexander J. Groesbeck; Lieutenant-Governor, Thomas Read; Secretary of State, Charles J. Deland; State Treasurer, Frank E. Gorman; Auditor-General, Oramel B. Fuller; Attorney-General, Merlin Wiley; State Highway Commissioner, Frank F. Rogers; Commissioner of Insurance, Frank F. Ellsworth; Commissioner of Banking, Frank W. Merrick; Commissioner of Labor; Food and Drug Commissioner, Fred L. Woodworth; Game Fish and Forest Fire Commissioner, John Baird; State Librarian, Mary C. Spencer.

JUDICIARY. Supreme Court: Chief justice Joseph H. Steere; Associate justices, John E. Bird, Nelson Sharpe, Joseph B. Moore, Howard Wiest, Grant Fellows, John W. Stone, George M. Clark.

MICHIGAN, UNIVERSITY OF. A non-sectarian, co-educational State institution of the higher learning at Ann Arbor, Mich., founded in 1837. There were about 10,700 students enrolled for the year, 1920. The faculty numbered 700, including about 80 additions. The income from all sources amounted to \$4,027,582.75. There were 420,000 volumes in the library, which were housed in the new library building, supposed to be the best equipped in the country. President, Marion LeRoy Burton, Ph.D., LL.D.

MICKLE, WILLIAM ENGLISH. A veteran Confederate soldier, died, February 18. He was born at Columbia, S. C., Oct. 31, 1846, and in 1864 enlisted in the infantry in the Army of Northern Virginia. He was severely wounded in the battle of Cedar Creek, Oct. 19, 1864, and retired for disability early in the following year. After the war he taught school in Mobile, Ala., and later went into business there. For many years he was a prominent official in charge of the fairs held throughout the State of Alabama and after Jan. 19, 1903, was adjutant-general of the United Confederate Volunteers.

MIDDLEBURY COLLEGE. A non-sectarian, co-educational institution of higher learning at Middlebury, Vt., founded in 1800. There were 318 students enrolled in the summer session and 447 in the regular fall session. The faculty numbered 43. The productive funds of the institution amounted to \$1,693,516 for endowment and the income for the year was \$151,412. The library contained about 50,000 volumes. President, John Martin Thomas, D.D., LL.D.

MILITARY ACADEMY, UNITED STATES. See UNITED STATES MILITARY ACADEMY.

MILITARY PROGRESS: I. UNITED STATES: A. THE ACT OF JUNE 4, 1920. The great military event of the year was the passage, June 4, 1920, of the act amending the so-called National Defense Act of June 3, 1916.

Broadly speaking, the act of June 4, 1920, represented in part at least the experience of the World War so far as our own military organization and policies are concerned. It marked the passage from the more or less parochial condition that had heretofore existed, to a national state in which our army is considered as a whole, in its relations on the one hand to the work it might be called to do, and on the other, to the people who were to furnish that army. We can not here in the limited space available, pretend to reproduce all of its provisions: we must content ourselves with those that are fundamental, and refer the reader to the full document * for details.

In respect of composition the regular army was defined anew, so as to include new creations, namely the air service, the finance department, the chemical warfare service (gas service), and it was declared that the "Organized peace establishment including the regular army, the national guard, and the organized reserves, shall include all of those divisions and other military organizations necessary to form the basis for a complete and immediate mobilization for the national defense in the event of a national emergency declared by Congress." It was further provided that the army shall at all times be organized so far as practicable into brigades, divisions, and army corps, and whenever the President may deem it expedient, into armies. This obviously was a statutory recognition of the necessity of adopting in time of peace, the form of organization that would have to be followed in time of war. The territorial subdivision was made to follow suit: where formerly we had departments, divisions, and the like, the act provided that for purposes of administration, training, and tactical control, the continental area of the United States should be divided on a basis of military population into *corps areas*. In other words, like France and Germany, we adopted the principles of *corps regions*. Only time and experience can show how this principle will work with us, and whether it will ever acquire the importance with us that it unquestionably had in the countries just named.

Each corps area was to have at least one division of the national guard or organized reserves, and such other troops as the President might direct, and the President was further authorized to group any and all corps areas into army areas or departments. Accordingly, by his direction the following corps areas were established for purposes of administration, training, and tactical control, to take effect Sept. 1, 1920.

a. First corps area, to embrace the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

Headquarters at Boston, Mass.

b. Second corps area, to embrace the States of New York, New Jersey, and Delaware.

Headquarters at Governors Island, N. Y.

c. Third corps area, to embrace the States of

* The National Defense Act, approved June 3, 1916, as amended by the Act, approved June 4, 1920. Washington, Government Printing Office, 1920.

Pennsylvania, Maryland, Virginia, and the District of Columbia.

Headquarters at Fort McHenry, Md. (Temporarily at Baltimore, Md., until space is available at Fort McHenry, Md.)

d. Fourth corps area, to embrace the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, Arkansas, and Louisiana.

Headquarters at Fort McPherson, Ga. (Temporarily at Charleston, S. C., until space is available at Fort McPherson, Ga.)

e. Fifth corps area, to embrace the States of Ohio, West Virginia, Indiana, and Kentucky.

Headquarters at Fort Benjamin Harrison, Ind.

f. Sixth corps area, to embrace the States of Illinois, Michigan, and Wisconsin.

Headquarters at Fort Sheridan, Ill. (Temporarily at Chicago, Ill., until space is available at Fort Sheridan, Ill.)

g. Seventh corps area, to embrace the States of Missouri, Kansas, Iowa, Nebraska, Minnesota, North Dakota, and South Dakota.

Headquarters at Fort Crook, Neb.

h. Eighth corps area, to embrace the States of Texas, Oklahoma, Colorado, New Mexico, and Arizona.

Headquarters at Fort Sam Houston, San Antonio, Texas.

i. Ninth corps area, to embrace the States of Washington, Oregon, Idaho, Montana, Wyoming, Utah, Nevada, and California.

Headquarters at Presidio of San Francisco, Cal. (Temporarily at San Francisco, Cal., until space is available at Presidio of San Francisco, Cal.)

The powers held by, the duties required of, and the authority vested in commanders of territorial departments within the continental limits of the United States on Sept. 1, 1920, were thereafter to be held by, required of, and vested in corps area commanders.

Upon the establishment of these corps areas the six territorial departments formerly embracing the continental area of the United States were discontinued, and the following obtained:

a. The island of Porto Rico, with the islands and keys adjacent thereto, were, for administrative purposes, attached to the second corps area. The Territory of Alaska was attached to the ninth corps area for the same purposes.

b. For the purposes of administrative and tactical control in connection with the border patrol and field operations incident thereto, such part of the State of Arizona as lies west of the 114th meridian and south of the 33d parallel was attached to the ninth corps area.

For the purposes of inspection, or maneuvers, of plans for mobilization, war, demobilization, etc., the nine corps areas were, under their establishment, grouped into three army areas as indicated:

First army area.—First, second, and third corps areas.

Second army area.—Fourth, fifth, and sixth corps areas.

Third army area.—Seventh, eighth, and ninth corps areas.

(G. O. 50, W. D., Aug. 20, 1920.)

In the matter of personnel, the act provided for 21 major-generals and 46 brigadier-generals of the line, i.e. generals serving with troops as distinguished from generals holding an office (e.g. chief of engineers, chief of infantry) who were

to be known as general officers of the staff. And whereas ever since Mr. Root's stewardship, line and staff were interchangeable, i.e. the so-called staff corps were filled by officers from the line, to return to troops after a certain length of service in the corps, so by the act, some of these corps reverted to their ancient closed status: these were the signal and the quartermaster corps, the ordnance and the judge advocate general departments, and the chemical warfare service, in which all officers above the grade of captain are now to be permanently commissioned. A new grade, that of warrant officer, was created, intermediate between commissioned and non-commissioned ranks. Seven grades of enlisted men were established varying in base pay from the first at \$74 per month, to \$30 for the seventh.

GENERAL STAFF CORPS. An important portion of the act was devoted to the organization of the general staff corps. That corps was defined to consist of the chief of staff, of the War Department general staff, and of the general staff with troops. An "initial eligible list" was ordered to be prepared by a board of general officers, to contain the names of all officers of the regular army, national guard, and officers' reserve corps, drawn from two classes of officers defined in the act itself, who should be qualified by education, military experience, and character for general staff duty. This list appeared late in December: as was to be expected, its omissions caused comment.

The duties of the two subdivisions of the general staff corps were defined in the act. The War Department general staff was to "prepare plans for national defense and the use of the military forces for that purpose, both separately and in conjunction with the naval forces, and for the mobilization of the manhood of the nation and its material resources in an emergency, to investigate and report upon all questions affecting the efficiency of the army of the United States, and its state of preparation for military operations; and to render professional aid and assistance to the Secretary of War and the chief of staff." The general staff with troops has simpler work to do: they are to "render professional aid and assistance to the general officers over them; to act as their agents in harmonizing the plans and duties and operations of the various organizations and services under their jurisdiction, in preparing detailed instructions for the execution of the plans of the commanding generals, and in supervising the execution of such instructions." For certain purposes, affecting the national guard and the organized reserves, reserve officers shall be added to the general staff committees, and while so serving shall be considered to be additional members of the general staff.

ASSISTANT SECRETARY OF WAR. This official was charged with supervising the procurement of all military supplies and other business of the War Department pertaining thereto, and the "assurance of adequate provisions for the mobilization of material and industrial organizations essential to wartime needs."

ARMS OF THE SERVICE. The act set out the strength in officers and men of the infantry, cavalry, field artillery, and coast artillery, and contained the important direction that in each of these arms, the men might be organized into such units as the President might prescribe. It provided that all tank units should form a part of the infantry, and that hereafter original en-

listments in the regular army should be for a period of one or three years at the option of the soldier, and that reenlistment should be for a period of three years.

NEW CREATIONS. The act brought into existence certain units. Among these was the war council, consisting of the Secretary and Assistant Secretary of War, the general of the army, and the chief of staff. It was made the duty of this council to meet from time to time and consider policies touching the military and munitions problems of the War Department. Another new department is the finance department, charged with the disbursement of all the funds of the War Department. In the medical department, a new branch appeared, the medical administrative corps, and members of the army nurse corps were given relative military rank. The chemical warfare service was created, its personnel fixed, and its duties defined. These cover the entire field of gas, smoke, and incendiary operations both offensive and defensive; the training of the army in chemical warfare; and the organization, equipment, training, and operations of special gas troops. Similarly an air service was created, its personnel, and rates of pay established, but no definition of its duties was attempted. Among the most noteworthy of new creations was the provision for chiefs of infantry, cavalry, and field artillery respectively, with the rank of major general.

It was provided that after July 1, 1920, no appointments of officers of Philippine Scouts should be made except of citizens of the Philippine Islands. Promotion examinations, except in the medical, dental, and veterinary corps, were abolished, save that all officers must be examined physically.

PROMOTION LIST (SINGLE LIST). Of far reaching importance and significance to the army was the establishment of the "promotion list," known in the army as the "single list." Until the passage of the act, promotion in the army was by arm of service, with the inevitable result of inequalities of promotion as between contemporaries that unquestionably at times affected the spirit of the army. This defect was removed by placing all officers of the army, with certain natural exceptions such as chaplains and medical officers, on one list for promotion, the list to be so drawn that its first name should be that of the officer having the longest commissioned service, the second that of the officer having the next longest service, and so on. It is believed that the establishment of this list will in time cure one of the greatest causes of discontent in the service.

CLASSIFICATION OF OFFICERS. But provision was also made for the elimination from the service of unworthy or unfit officers. For many years, some officers had argued in favor of the principle of promotion by selection: whether reasonably or not, the service at large set its face against any such principle. Others argued that if the unfit could be got rid of, then the remainder would be all equal in respect of meriting promotion. It is clear that, apart from the mere matter of advancement, only competent officers should remain in the service, and means to secure that result were furnished by the act. Immediately on its passage, and in September of 1921, and every year thereafter, the President was ordered to convene a board of not fewer than five general officers who should arrange all officers in two classes, Class A, containing officers

who should be retained in the service, and Class B, officers who should not be retained in the service. But no officer should be definitely retained in Class B until given an opportunity to make a defense before a court of inquiry. But if he should be so retained, then a board of three officers was to decide whether such classification were due to his neglect, misconduct, or avoidable habits. If the finding were affirmative, the officer was to be discharged from the army; if negative, he should go on the retired list with pay at the rate of 2.5 per cent of his active pay multiplied by his completed years of commissioned service, unless his total commissioned service were less than 10 years, in which case he should be honorably discharged with one year's pay.

OFFICERS' RESERVE CORPS: TRAINING CAMPS. Provision was made for what will always be the greatest need of the United States in war, officers. Hence the organization of the officers' reserve corps, consisting of general officers, of sections corresponding to the various branches of the regular army, and of such other sections as the President might direct. Many sections of the act were devoted to this reserve. The most important was that providing for a reserve officers' training corps in civil institutions, by the establishment of senior divisions in universities and colleges giving degrees, and of junior divisions at all other public and private educational institutions. Each division was to contain units of the several arms, corps, and services in such number and strength as the President might direct. But no such units could be established until a regular officer had been detailed as professor of military science and tactics, and in general, until the authorities of the school or college had established a two-year elective or compulsory course of military training. The courses of the respective units of the R. O. T. C. were to be prescribed by the Secretary of War. Another provision for future officers was that creating upon military reservations or elsewhere, schools or camps for the military instruction and training, with a view to their appointment as reserve officers or non-commissioned officers, of such warrant officers, enlisted men and civilians as might be selected upon their own application. And finally we may record here the fact that an enlisted reserve corps was established.

NATIONAL GUARD: MILITIA. On the whole, the provisions of former laws relating to these two elements were left unchanged. A new section, however, fixed the qualifications for national guard officers; and the militia division of the War Department became the militia bureau of the same, with a chief to be drawn from the national guard, to hold office for four years, and to have the rank, pay, and allowances of a major-general. He was to be assisted by as many regular army officers and men as the President might deem necessary. The President might also assign, but only with their consent, not to exceed 500 officers of the national guard, who hold reserve commissions, to duty with the regular forces. Pay for officers and men of the national guard was established, and the President was authorized to draft into the military service of the United States any and all members of the national guard and of the national guard reserve. But this could be done only when Congress has authorized the use of the armed land forces of the United States for any purpose requiring the

use of troops in excess of those of the regular army.

To carry out the provisions of the law, certain executory orders were issued by the War Department. One of these has already been considered (G. O. 50, 1920) relating to corps areas. Others define in greater detail the duties of the Assistant Secretary of War (G. O. 48, Aug. 12, 1920), and of the War Department general staff (id.); prescribe the dissolution of the board of ordnance and fortification (G. O. 49, Aug. 14, 1920), and the rights and privileges of nurses (id.); and finally the duties and responsibilities of chiefs of the combatant arms (G. O. 59, Sept. 21, 1920). These orders should be carefully examined by those interested in the law, because they translate and interpret it.

The new law naturally gave rise to exposition and discussion. As explained by Maj.-Gen. W. G. Haan, United States army, Director of War Plans Division of the War Department General Staff, the act under question will result in the development of one effective well-balanced army, the army of the United States.

"In the future," [as contemplated by the Amended National Defense Act], "the army of the United States will be composed of three coordinate components, the regular army, the national guard, and the organized reserves. Each component will have a fixed mission and an equally important rôle.

"The regular army will garrison our overseas possessions, the coast fortresses and other stations necessary to be maintained in the United States; will provide personnel to assist in the training of the national guard and organized reserves; and will provide the personnel necessary for the administration of the army and the organization of an adequate and effective force which will be instantly available for emergencies within the United States or elsewhere, and which in peace time, will serve as a model for the organization, discipline, and training of the active and semi-active military forces of the nation.

"The national guard will provide in time of peace an adequate and effective force available in minor emergencies for employment by the States or the United States; and in time of war will provide an adequate, balanced, and effective component of the army for employment within the United States or elsewhere. It is the second line increment of the army in peace or war. Its ultimate strength will be approximately 435,000.

"The organized reserves will provide an organized and balanced force which may be expanded into an adequate war component of the army to meet any emergency requiring the use of troops in excess of those of the regular army and the national guard. The organized reserve is distinctly a war force. In time of peace it will be maintained at such strength as many be necessary to form a skeletonized organization, or cadre, capable in an emergency of broad expansion.

"Each unit of the organized reserve will be localized and will be officered by reserve officers residing in the neighborhood. The enlisted personnel will be assigned to units localized in the vicinity of their places of residence. Provisions will be made for transferring officers and enlisted men upon changes of residence to similar units located in their new places of residence. As the organized reserves are distinctly a war force and will attract a class of citizens who do not feel inclined or are unable to undertake the obliga-

tions assumed by members of the national guard, and as it will be maintained as a cadre or skeletonized force, there will be no competition between it and the national guard." (*National Service*, December, 1920, condensed from *Army and Navy Journal*, Sept. 11, 1920.)

"Two general plans," said Col. O. L. Spaulding, General Staff, in the *Field Artillery Journal*, May-June, 1920, "for the organization of the army under the Act of June 4, 1920, are under discussion. Both assume the infantry division as the fundamental mixed unit; the two types of organization may be referred to as the 'large division' and the 'small division' plans.

"By the large division is meant a division organization on the same general lines as the one we used in France, two infantry brigades of two regiments each, the infantry regiment of three 1000-rifle battalions, augmented by the incorporation of special armament, heavy artillery, machine guns, and trains enough to make it a complete self-sustaining unit. This unit has certain advantages and disadvantages. It is a very powerful fighting machine; and a single division staff handles all components, fighting and supply. Besides this, it has successfully met the test of war. It lends itself very well to two distinct methods of tactical handling, brigades in depth or brigades abreast.

"The suggestions for a change are on the ground that the division is too large and heavy, or on the ground that a three-unit organization is more convenient than a two-unit. The large division leaves no room for an organic army corps, since it is really a corps itself. Hence, any material reduction would destroy its great characteristics, as a complete and self sufficient body, and make it a less efficient army corps, without making it a light maneuvering division.

"The small division does not undertake to be a complete self-contained unit, but rather assumes an army corps as an organic unit, and depends upon the corps for support, reinforcement, and further supply.

"The form of small division which is now proposed uses the three-unit system of organization, and its framework is three infantry regiments of three 1000-rifle battalions. As to tactical handling, it might readily be formed with regiments abreast, or a more natural use would seem to be with two regiments in line and one in division reserve." (*National Service*, December, 1920.)

General March, Chief of Staff, in his report for 1920 found a flaw in the act of June 4, 1920, in that it did not provide for universal military training:

"The act provides for a regular army of approximately 280,000 men and 17,700 officers. It does not provide for universal military training nor for the application of the draft system in future emergencies. It may be stated without further qualifications that an adequate reserve of trained soldiers, available for use in an emergency is an essential prerequisite to any plan for national defense, and the creation and maintenance of such reserve without military training is impossible."

He anticipated but little trouble in obtaining the 280,000 men needed for the peace army, but expected some in getting the 17,717 officers required. He went on to say that a new and permanent policy whereby the War Department "definitely assumes the responsibility for the education and recreation of the enlisted person-

nel" has been promulgated as the result of war experiences and "the illiteracy so strikingly prevalent in the draft army." Functioning through three sections, education, camp activities, and moral training, the new service, General March said, has set up machinery to "train technicians and mechanics to meet the army's needs and to raise the soldier's general intelligence in order to increase his military efficiency and to fit the soldier for a definite occupation upon his return to civil life."

In his report, Mr. Secretary Baker made no comment on the omission of universal training from the law, but heartily approved of the relationship established between the regular army and the national guard. He disapproved of the optional one-year enlistment.

NATIONAL GUARD. The national guard provisions of the Act were criticized in some other quarters. Thus Mr. Howard Kingsbury in the October number of *National Service* said:

"Federal pay cannot lawfully be provided for or Federal control exercised over the militia not in Federal service. The militia cannot be brought into Federal service except for the purposes, and subject to the limitations, prescribed by the Constitution. 'The only power of the Federal government to maintain a Federal military establishment is in the power to raise and support armies. Congress therefore undertakes to do by the present act, as by the National Defense Act, under the guise of exercising its power to provide for organizing the militia, what it can constitutionally do only under its power to raise and support armies. That this constitutional error and statutory disingenuousness have been repeated does not prove, however, that they must be permanent. The present act should not be accepted as the last word in legislation on the subject.'"

And the state of the national guard is shown in the following table:

STATE OF THE NATIONAL GUARD OF THE UNITED STATES, OCTOBER, 1920

	Present strength Line officers	Enlisted men	Au- thorized strength	Present strength in per cent of authorized
1. Wyoming	27	543	560	97
2. Porto Rico	34	1,388	1,641	85
3. Utah	22	542	713	76
4. Rhode Island	37	821	1,086	76
5. Minnesota	166	3,620	5,196	70
6. Oklahoma	110	2,605	8,813	68
7. Maine	56	1,286	1,991	65
8. Oregon	51	1,375	2,152	64
9. Tennessee	51	1,316	2,294	57
10. New Jersey	99	2,139	4,084	52
11. Pennsylvania	303	6,560	13,405	49
12. Wisconsin	194	5,059	10,419	48
13. Washington	59	1,258	2,695	47
14. Kansas	89	1,814	4,043	45
15. Florida	3	699	1,563	45
16. Vermont	27	603	1,361	44
17. Texas	261	6,953	16,028	43
18. Virginia	48	999	2,365	42
19. New York	374	8,582	20,857	41
20. Missouri	76	1,790	4,429	40
21. Colorado	44	829	2,069	40
22. Idaho	6	154	889	40
23. Iowa	65	1,628	4,580	36
24. Alabama	31	856	2,432	35
25. Arizona	8	210	658	32
26. Hawaii	29	951	3,020	31
27. South Carolina	24	538	1,859	29
28. D. of Columbia	5	230	801	29
29. Connecticut	14	320	1,360	24
30. California	28	862	3,716	23
31. Ohio	139	2,977	13,184	23
32. Michigan	33	708	3,326	21
33. Maryland	18	408	3,044	13
34. North Carolina	19	361	2,721	13

	Present strength Line officers	Enlisted men	Au- thorized strength	Present strength in per cent of authorized
35. Georgia	15	336	2,877	12
36. Nebraska	6	144	1,491	10
37. Kentucky	12	267	2,686	10
38. Massachusetts	44	903	10,537	9
39. Mississippi	8	155	1,879	8
40. New Mexico	3	50	1,128	4
41. Arkansas	4	64	1,758	4
42. Other States . . . . .	...	...	16,514	...
Total	2,642	62,908	182,724	...

B. MISCELLANEOUS. We group here mostly for reference certain matters not susceptible of general classification: G. O. 4, War Department, Jan. 22, 1920, set out the policy of the army and navy relating to aircraft, and provided that all questions regarding the policy of the War and Navy departments with regard to the tactical and strategical functions of aircraft should be referred to the joint board (army and navy) for consideration and recommendation to the respective department secretaries. G. O. 18, War Department, March 25, 1920, gave a new designation of service schools. G. O. 25, War Department, April 30, 1920, announced the policy of the War Department in regard to the classification of graduates of the general service schools. It was still found necessary to maintain a large number of troops on our Mexican frontier.

II. FOREIGN COUNTRIES: 1. FRANCE. France still kept a large force under arms, and the three-year service law was still in force. Troops were stationed on the Rhine, and of course, but with reduced effectives, in home garrisons including the colonies. An army was stationed in Syria, another in the Balkans. The bulk of the forces however was kept in France and North Africa. The situation in respect of France may be summed up by saying that the existing situation was a hold-over from pre-war conditions. Changes were expected, and bills introduced in the Parliament to make these changes, but nothing was settled. More specifically, the question of the reorganization of the army, involving among other things a reduction of the length of military service came up, and various bills were submitted. The following points, it would seem, are accepted by all:

(a) Reduction of financial burden imposed upon the citizens of the country, with a maximum length of service of one year.

(b) Better utilization of the resources of the country with respect to a national war, if it should once more be forced upon the country.

(c) Above all, maintenance of the principle of universal service. Among other matters considered was the physical education of French youth, and the relative preparation for obligatory military service. Public opinion seems to favor a veritable nation in arms, in which it would be the business of the old army to train Frenchmen, whether young or middle-aged, for their military duty. It is clear that the country in respect of its army, was passing through a sort of psychological crisis. Reserve officers questioned a policy looking to the maintenance of a permanent army, when according to their belief, the war was won in greater part by their own efforts. The fallacy of this belief was evident, but the number under its influence, great.

In respect of the supreme command, the following reorganization was adopted:

The designated commander-in-chief takes in time of peace the title of vice-president of the supreme war council. In this council, of which the Minister of War is president, are included for deliberative purposes, the marshals of France, and not to exceed 10 generals of division, among whom is the chief of staff. This officer, besides superintending the staff of the army, directs all the departments charged with the organization or the training of the troops, mobilization, armament, defense of the national territory, and the supply of war material.

The whole subject of the national defense was thus placed in the hands of the designated commander-in-chief.

2. **GREAT BRITAIN.** Much was done toward the reestablishment of the army on a peace basis, and demobilization was substantially completed. Fully two thirds of the British army was employed outside of Great Britain and Ireland. The reorganization of the army was kept in hand, looking, on completion, to an establishment composed of the regular army proper, the special reserve, and the territorial army. The special reserve is intended as a substitute for certain special units existing before the war. It will be of value in expanding the regular army in time of war, by forming six divisions. The territorial army when fully organized will consist of 14 divisions (infantry) and one cavalry (yeomanry) division. It may not be sent out of the country save by special act of Parliament, and is intended to provide for home security, order, and military police generally after the regular forces shall have gone overseas. With the special reserve, already mentioned, it will furnish means for expanding the regular army in case of need. It may be remarked here that the royal garrison artillery (corresponding to our coast artillery corps) will in the reorganization be formed into heavy field artillery brigades. This accords with the experience of the World War, which broke down practically all distinctions heretofore existing in the various branches of this great arm of the service. Special attention was paid to aviation. (See **AÉRONAUTICS**.)

3. **ITALY.** The reorganization of the army was delayed by uncertainty in respect of the future military policy. It is a cardinal point with Italy to be supreme in the Adriatic, and this condition colored and will continue to color her military policy.

4. **GERMANY.** Germany continued to cause dissatisfaction by her chicanery, chiefly in respect of disbanding her troops in accordance with the terms of the treaty. She maintained civic guards in Bavaria and Eastern Prussia; she also had a large constabulary or security police, which she was unwilling to abolish. On the material side her record was better. She had surrendered 41,000 guns, 29,000 guns unmounted, 163,000 machine guns and barrels, 2,800,000 rifles, 16,000 airplanes, and 25,000 airplane motors.

5. **JAPAN.** According to press accounts, military activity increased in Japan during the year. This activity was manifested in a budget providing for expenditures greatly exceeding those of past years. The immediate reason for this increase may be found in any one of two or three situations. For example, relations continue strained over the question of Japanese immigration to the United States. This is mentioned here solely *pro forma*. Next, the Bolshevik situ-

ation in Siberia deeply interests the Island Empire, and lastly so does China.

REFERENCES. War Department Reports and orders for 1920; *Army and Navy Journal*; *National Service*; and *Revue Militaire Suisse*, for 1920.

MILITARY TERRITORY OF THE NIGER. A territory under the government-general of French West Africa (q.v.); capital, Zinder.

MILITARY TRAINING IN THE HIGH SCHOOLS. See **EDUCATION IN THE UNITED STATES**.

MILITIA. See **MILITARY PROGRESS**.

MILK. See **DAIRYING**.

MILK SUPPLY. See **MUNICIPAL OWNERSHIP**.

MILLER, WARREN. Judge, died at Ripley W. Va., December 29. He was born in 1845 and held several important offices in West Virginia, where he was elected member of Congress in 1894, serving two terms. He was for some years judge of the Supreme Court of Appeals and he served as chairman of the debt committee of the State Senate.

MILLERAND, ALEXANDRE. Prime minister of France, elected president Sept. 22, 1920. He was born in Paris, Feb. 10, 1859, and educated in the *lycées*. He practised law but at an early age entered politics on the Socialist side, having defended Socialists with success in the course of contests in the courts. In 1885 he became a Deputy, and he entered the Waldeck-Rousseau ministry in 1889 as Minister of Commerce. This was an important incident in the history of French Socialism since it brought up definitely the issue of participation in the government. A strong element of the party opposed all participation by Socialists in a capitalist ministry and in the contest that followed Millerand's appointment this party prevailed, and he was expelled from the ranks although a considerable minority supported him. M. Guesde, leader of the orthodox majority, remarked on Millerand's acceptance, that while "Socialists formerly showed their devotion by dying at the barricades, now they are devoted up to the point of accepting a portfolio." In 1909 he was appointed to the first Briand ministry taking the portfolio of Public Works, Posts and Telegraphs; and he was active in carrying out the celebrated stroke of the government by which the great railway strike was brought to an end through the calling of the strikers into military service in October, 1910. In the Poincaré ministry in 1912 and 1913 he was Minister of War and aided in the election of his chief to the presidency. He again held this post when the "cabinet of national defense" was formed on Aug. 28, 1914, but resigned before the coalition ministry came into power in October, 1915. During all this period he steadily departed from the orthodox Socialist principles with which he began his career, and he became a strong Nationalist in politics, receiving latterly the support of even such conservative groups as were represented by Barrès and Léon Daudet. During the war he took a leading part in organizing the famous national *bloc* which stood behind Clemenceau in his fight against the disloyal elements in the country. Upon Clemenceau's retirement he became Prime Minister and Minister of Foreign Affairs (January, 1920). As Prime Minister he followed a policy which led finally to complete disagreement with Lloyd

MINERAL PRODUCTS OF THE UNITED STATES IN 1918 AND 1919

Product METALLIC	Quantity	Value	1918				1919 ^a			
			Quantity	Value	Quantity	Value	Quantity	Increase or decrease (approximate) Quantity	Value	Percentage of increase or decrease (approximate) Quantity
Aluminum	13,570	\$41,159,000	.....	.....	.....	.....	.....	.....	.....	.....
Antimonial lead
Antimony
Bauxite
Cadmium
Chromite
Copper, sales value
Ferroalloys
Gold
Iron:
Ore
Pig
Lead (refined), sales value
Manganese ore (35 per cent or more Mn)
Manganiferous ore (5 to 35 per cent Mn)
Nickel, value at New York City
Platinum and allied metals (value at New York City)
Quicksilver (value at San Francisco), flasks
Silver
Tin (metallic equivalent)
Titanium ore (rutile)
Tungsten ore (50 per cent concentrates)
Uranium and vanadium minerals
Zinc, sales value
Total value of metallic products (approximate)

^a Many of the figures for 1919 are estimated. This fact is indicated in the following detailed tables on the various mineral products.

^b Excluded from metallic totals, as the value of the antimony contained in antimonial lead is included in the antimonial-lead value and the remainder under last item ("unrefined").

^c Figures for 1919 not yet available. Estimate of value included in total value of metallic products.

^d Not included in total value.

MINERAL PRODUCTS OF THE UNITED STATES IN 1918 AND 1919—Continued

Product NON-METALLIC	1918		1919 a				Percentage of increase or decrease (approximate) Quantity Value
	Quantity	Value	Increase or decrease (approximate)		Quantity Value		
			Quantity	Value			
Arsenious oxide a	6,923	\$1,213,000	Quantity	Value	Quantity	Value	
Asbestos	1,002	124,687	6,029	(b)	294	(b)	5
Asphalt	587,809	8,216,012	1,412	\$825,580	410	+	41
Barytes (crude)	155,869	1,044,905	715,000	10,000,000	127,000	+	22
Borax	88,794	2,179,380	190,000	1,454,000	35,000	+	22
Bromine	1,727,156	970,099	66,146	1,880,000	23,648	+	39
Calcium-magnesium chloride ..	26,324	508,452	1,957,500	1,891,000	280,800	+	26
Cement	71,846,474	118,554,854	26,500	341,200	124	+	37
Clay			86,013,000	145,058,000	14,665,000	+	42
Products							5
Raw							21
Coal	2,976,861	220,578,493	2,868,000	260,790,000	613,000	+	21
Bituminous		c 8,332,641		c 7,077,000		+	15
Pennsylvania anthracite	579,385,820	1,491,809,940	458,063,000	(d)			
Coke	88,287,575	836,480,347	77,000,000	(d)	-131,323,000		(d)
Diatomaceous (infusorial) earth and tripoli ..	56,478,372	c 382,824,868	44,821,000	(ca)	-11,657,000		(ca)
Emery (also corundum in 1918) ..	/ 22,947	/ 224,801	(d)	(d)			(d)
Feldspar	10,422	112,878	2,000	42,000	8,422	-	81
Fluorspar	99,120	674,346	(d)	(d)			-63
Fuller's earth	263,317	5,465,481	122,000	3,102,000	142,000	-	54
Garnet for abrasive purposes ..	84,468	1,146,854	106,000	2,000,000	22,000	+	74
Gems and precious stones	4,996	248,161	4,865	808,437	4	+	22
Graphite:				128,046		+	16
Amorphous	6,560	69,455	4,000	47,000	2,500	-	39
Crystalline	12,861,389	1,454,799	7,484,000	696,000	5,428,000	-	52
Grindstones and pulpstones ..	85,389	1,776,282	(d)	(d)	(d)		(d)
Gypsum	2,057,015	11,470,854	2,430,000	16,000,000	878,000	+	16
Lime	8,206,016	26,808,909	2,976,000	27,028,000	280,000	+	39
Magnetite (crude)	231,605	1,812,601	164,696	1,652,094	66,909	-	7
Mica:							9
Scrap	2,292	33,130	(d)	(d)	(d)		(d)
Sheet	1,644,200	731,810	(d)	(d)	(d)		(d)
Millstones		92,514					

MINERAL PRODUCTS OF THE UNITED STATES IN 1918 AND 1919—Continued

1919 a		1918					
Product	Quantity	Value	Quantity	Value	Quantity	Increase or decrease (approximate) Value	Percentage of increase or decrease (approximate) Quantity Value
NON-METALLIC							
Mineral paints:							
Natural pigments.....	135,746	26,484,590	145,280	24,600,900	+	8,008,481	+ 7
Zinc and lead pigments.....	40,709,722	4,582,001	43,718,158	4,884,857	+	82,400,000	+ 3
Mineral waters.....	721,000,959	153,553,560	638,600,000	63,650,000	+	6,096,000	+ 4
Natural gas.....	282,535,550	50,363,535	638,600,000	63,650,000	+	13,100,000	+ 3
Oilstones, etc.....	1,010	189,038	69,197	705,532	+	341,711	+ 33
Peat.....	107,261	1,047,248	377,719,000	775,000,000	+	21,791,000	+ 6
Petroleum.....	855,927,716	703,943,961	1,941,700	10,335,900	+	549,000	+ 10
Phosphate rock.....	2,490,760	8,214,463	1,941,700	10,335,900	+	2,121,400	+ 26
Potash (K ₂ O).....	38,580	15,839,618	130,899	7,889,440	+	2,121,400	+ 22
Pumice.....	30,637	91,178	380,000	84,000	+	18,000	+ 5
Pyrites.....	464,494	2,644,515	2,500,000	174,000	+	356,000	+ 1
Salt.....	7,238,744	26,940,361	7,064,500	27,296,000	+	145,000	+ 2
Sand:							
Glass.....	2,172,887	4,209,728	1,690,000	3,090,000	+	1,120,000	+ 22
Molding, building, etc., and gravel.....	59,651,539	83,717,851	58,506,000	84,729,000	+	1,146,000	+ 2
Sand-lime brick.....	98,399	888,929	145,000	1,725,000	+	47,000	+ 47
Silica (quartz).....	71,740	259,330	71,380,000	5,065,000	+	1,026,000	+ 25
Slate.....	68,563,360	4,038,770	71,380,000	115,000,000	+	2,817,000	+ 39
Stone.....	1,266,709	82,700,430	16,750,000	11,118,000	+	597,000	+ 4
Sulphur.....	137,140	27,868,000	124,800	1,626,800	+	152,319	+ 9
Talc and soapstone (exclusive of fibrous talc).....	71,167	1,778,919	739,400	162,700	+	11	+ 18
Talc, fibrous.....	71,167	902,100	63,200	789,400	+	7,967	+ 11
Thorium minerals (monazite).....	.....	.....	.....	.....	+	.....	.....
Total value of non-metallic products (approximate).....	.....	\$3,379,080,000	.....	\$3,275,630,000	+	\$103,450,000	+ 3
SUMMARY							
Total value of metallic products.....	.....	\$2,152,919,000	.....	\$1,872,770,000	+	\$780,149,000	+ 36
Total value of non-metallic products (exclusive of mineral fuels).....	.....	642,929,000	.....	8,275,630,000	+	103,450,000	+ 3
Total value of mineral fuels.....	.....	2,736,151,000	.....	.....	+	.....	.....
Total estimated value of "unspecified" (metallic and non-metallic) products.....	.....	6,700,000	.....	5,300,000	+	1,400,000	+ 21
Grand total approximate value of all mineral products.....	.....	\$5,538,699,000	.....	\$4,653,700,000	+	\$884,999,000	+ 16

a In addition to the arsenious oxide (white arsenic), metallic arsenic was produced in 1918 and 1919. The value of this metallic arsenic is included under last item ("unspecified").

b Value included under last item ("unspecified"). Survey not at liberty to publish figures.

c Not included in total value. Estimate of value included in total value of non-metallic products.

d Figures for 1919 not yet available.

e Figures for 1919 not yet available.

f Exclusive of considerable production for special uses, value for which is included under last item ("unspecified").

g Canvases discontinued after 1915. Value of iron ore sold for paint included under last item ("unspecified").

h Exclusive of sublimed lead in 1919, value for which is included in total value of non-metallic products.

i Figures for 1919 represent production: figures of sales (as for 1918) not yet available. Production decreased 23,904 short tons, or 44 per cent, in quantity, and \$13,628,228, or 63 per cent, in value in 1919, as compared with 1918.

j Includes products as follows: Antimony other than content of antimonial lead, metallic arsenic (also white arsenic in 1919), blismuth, cadmium sulphide, cherts, chert, cobalt concentrates, columbite (Ta₂O₅), diatomaceous earth for special uses, flint lining for tube mills, optical fluor spar, ilmenite, iron ore sold for paint, lithium minerals, magnesium, marks, molybdenum, monazite sand, pebbles for grinding, selenium, silica sand and sandstone (finely ground), slate granules, sodium salts (carbonate, bicarbonate, and sulphate) from natural sources, strontium ore, tellurium, and an estimate of the value of miscellaneous mineral products, statistics for which are not collected annually by the Survey.

George. In this he was entirely logical, for at the beginning he had laid it down as his programme that the treaty should be consistently executed and that there should be no compromise with the Bolsheviks. It had been a marked characteristic of his political career to accept no office without making it perfectly clear what principles would direct his policy, and then to proceed in exact accord with these principles. The policies of Lloyd George which took into consideration changing conditions and developed in accordance with them led inevitably to a break and at the close of Millerand's ministry the French foreign policy was so far removed from the British that there were frequent predictions of a rupture between the two Allies. In his meetings with the Allies at San Remo, Boulogne, Hythe, Spa, and Aix-les-Bains, he adhered consistently to his policy of uncompromising hostility toward Soviet Russia and the protection of Poland. By the recognition of the Anti-Bolshevik leader, General Wrangel, in South Russia, and the thick and thin support of Poland, French foreign policy broke definitely with the British. (See FRANCE; also WAR OF THE NATIONS.) In this Millerand seemed to have the support of the entire country or rather of all the more or less conservative elements who after the war controlled the government. He embodied the typical French point of view in the period following the war and was criticized for its limitations. Like other leading men in France conspicuous after the war he held strictly to a policy based on immediate national interest and scouted all tendencies toward idealism and toward the creation of a new Europe.

Upon the offer of the presidency he at first refused but was prevailed upon by his friends to accept when it became plain that M. Deschanel was physically unable to retain his office. The election was held Sept. 22, 1920. Out of 892 votes he obtained 695. Upon his election he declared that he considered it necessary that the constitution should be modified in certain respects but only when circumstances permitted and only when the execution of the peace treaty was complete. He thought that it was possible by a better interpretation or adaptation of the text of the constitution to empower the President of the Republic to intervene to advantage in the conduct of foreign policies. The choice of Millerand appeared to be popular for he was generally regarded as a safe and strong personality.

MILLIKEN, SETH MELLEN. Cotton manufacturer, died, March 5. He was born at Portland, Me., Jan. 7, 1836, and went into business in 1856. He was for many years the senior member of the firm of Deering Milliken and Company, and was interested in other manufacturing com-

panies in the New England and Southern States. He was a Republican presidential elector in 1892.

MILWAUKEE, WIS. See CITY PLANNING; GARBAGE; SEWERAGE AND SEWAGE PURIFICATION.

MINERALOGY. See DIAMONDS; and GEMS AND PRECIOUS STONES.

MINERAL RESOURCES. The following information was supplied by the United States Geological Survey in 1920: Statistics of mineral production in the United States for 1919 reflect the reaction from intensive production for war purposes and the unsettled state of industry in general. Production of special "war minerals" rapidly subsided, although not to its pre-war status. These minerals, however, even under the stimulation of war demand, had contributed only in very small part to the country's mineral production. The principal decline was due to diminished production of coal and the major metals. Petroleum increased about 6 per cent in quantity and 10 per cent in value, but structural materials, due for a rapid recovery from the low demand during the war, were retarded until late in summer, when their production increased very rapidly. The total value of all mineral products in 1919 was about \$4,653,700,000, 16 per cent less than in 1918. The value of metal products decreased 36 per cent, but it is estimated that the value of mineral fuels and other nonmetallic products decreased only 3 per cent. This small decrease for nonmetals was due to higher prices in 1919, and the table in succeeding pages will show much higher rates of decrease in quantity for many commodities. Figures of total mineral production will be found on pages 442-444.

Gold, bound by a fixed price while costs of mining continued to rise, declined greatly in output from dry or siliceous ores and from placers, and also as a by-product from ores of base metals whose prices decreased. These conditions continued during the first half of 1920, and in June, 1920, only 42 per cent of the gold mines of the country were active. Legislation for stimulating the gold-mining industry was proposed.

MINERAL PRODUCTION. See ALASKA.

MINIMUM WAGE. No new minimum wage laws were passed in the States or Territories of the United States in 1920 and at the close of the year the situation in this respect remained the same as noted in the preceding YEAR BOOK, that is, minimum wage laws existed in only fourteen States of continental United States, and in Porto Rico, and applied only to females and minors. For the main provisions of minimum wage legislation in the States, see YEAR BOOK for 1919. The accompanying table published by the United States Department of Labor shows the awards under the minimum wage laws of the respective States during the year 1920.

AWARDS ISSUED UNDER MINIMUM WAGE LAWS.

ARKANSAS			
Date of Award	Occupations or Industries	Classes of Employees	Amount of Wage
.....	Any manufacturing, mechanical, or mercantile establishment, laundry, express or transportation company.	Experienced females.....	\$1.25 per day.
		Inexperienced females.....	\$1 per day.
May 20, 1919...	Hotels and restaurants.....	Experienced females.....	\$1.25 per day.
		Inexperienced females.....	\$1 per day.
Sept. 1, 1920...	Mercantile establishments in Fort Smith.	Experienced females.....	\$13.25 per wk.
		Inexperienced females.....	\$11 per wk.

AWARDS ISSUED UNDER MINIMUM WAGE LAWS

CALIFORNIA

<i>Date of Award</i>	<i>Occupations or Industries</i>	<i>Classes of Employees</i>	<i>Amount of Wage</i>
June 26, 1920...	Fruit and vegetable canning..	Experienced women or minors.	\$16 per wk.; \$0.38½ per hr.
		Inexperienced women.....	\$12 per wk.; \$0.25 per hr.
		Inexperienced minors (females)	\$10.56 per wk.; \$0.22 per hr.
		Inexperienced minors (males)	\$14.40 per wk.; \$0.30 per hr.
July 31, 1920...	Mercantile industry.....	Experienced women or minors.	\$16 per wk.; \$0.38½ per mo.
		Inexperienced women.....	\$12 per wk.; \$0.25 per mo.
		Inexperienced minors.....	\$10 per wk.; \$43.38½ per mo.
July 24, 1920...	Fish canning industry.....	Women or minors:	
		Experienced	\$16 per wk.; \$0.38 per hr.
		Inexperienced	\$12 per wk.; \$0.25 per hr.
July 31, 1920...	Laundry and dry cleaning industry.	Women or minors:	
		Experienced	\$16 per wk.; \$0.38½ per mo.
		Inexperienced	\$12 per wk.; \$0.25 per mo.
July 24, 1920...	Fruit and vegetable packing industry.	Experienced women and minors	\$16 per wk.; \$0.38½ per hr.
		Inexperienced women.....	\$12 per wk.; \$0.25 per hr.
		Inexperienced minors.....	\$10.56 per wk.; \$0.22 per hr.
July 31, 1920...	General and professional offices	Experienced women and minors	\$16 per wk.; \$0.38½ per mo.
		Inexperienced:	
		18 years and over.....	\$12 per wk.; \$52 per mo.
		Under 18 years.....	\$10 per wk.; \$43.38½ per mo.
July 31, 1920...	Unclassified occupations.....	Experienced women.....	\$16 per wk.; \$0.38½ per hr.
		Experienced minors.....	\$12 per wk.; \$0.25 per hr.
		Inexperienced women.....	\$12 per wk.; \$0.25 per hr.
		Inexperienced minors.....	\$10.56 per wk.; \$0.22 per hr.
Sept. 25, 1920...	Manufacturing	Experienced women and minors	\$16 per wk.; \$0.38½ per mo.
		Inexperienced women.....	\$12 per wk.; \$52 per mo.
		Inexperienced minors.....	\$10 per wk.; \$43.38½ per mo.
July 31, 1920...	Hotels and restaurants.....	Experienced women or minors.	\$16 per wk.; \$0.38½ per mo.
July 24, 1920...	Agricultural occupations.....	Adult women.....	\$16 per wk.; \$0.33½ per hr.

DISTRICT OF COLUMBIA

May 26, 1920...	Hotel, restaurant, and allied industries.	Females	\$71.50 per mo. \$16.50 per wk. \$0.34½ per hr.
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MASSACHUSETTS

Jan. 1, 1920...	Candy making.....	Females:	
		Experienced	\$12.50 per wk.
		Inexperienced	\$8 per wk.
Feb. 1, 1920...	Men's clothing and raincoats.	Experienced females 18 years and over.	\$15 per wk.
		Inexperienced females.....	\$7 per wk.
Mar. 1, 1920...	Corset occupation.....	Experienced females.....	\$13 per wk.
		Inexperienced females 17 years and over.	\$10 per wk.
		Inexperienced females under 17 years.	\$8 per wk.
July 1, 1920...	Women's clothing factories...	Experienced females over 18 years.	\$15.25 per wk.
		Inexperienced females 18 years and over.	\$12 per wk.
		Inexperienced females under 18 years.	\$10 per wk.
	Knit goods.....	Females:	
		Experienced	\$13.75 per wk.
		Inexperienced	\$8.50 per wk.
	Paper-box occupation.....	Females:	
		Experienced	\$15.50 per wk.
		Inexperienced—	
		16 years and over.....	\$11 per wk.
		Under 16 years.....	\$9 per wk.

NORTH DAKOTA

June 15, 1920...	Public housekeeping (waitresses and counter help).	Women and minors:	
		Experienced	\$17.50 per wk.
		Inexperienced	\$14 per wk.
	Public housekeeping (chambermaids and kitchen help).	Women and minors:	
		Experienced	\$16.70 per wk.
		Inexperienced	\$13.20 per wk.
	Personal service.....	Women and minors:	
		Experienced	\$17.50 per wk.
		Inexperienced	\$13 per wk.
	Laundry, telephone.....	Women and minors:	
		Experienced	\$16.50 per wk.
		Inexperienced	\$12 per wk.
	Mercantile	Women and minors:	
		Experienced	\$17.50 per wk.
		Inexperienced	\$12 per wk.
	Manufacturing (candy or biscuit making, printing or job-press feeding).	Women and minors:	
		Experienced	\$16.50 per wk.
		Inexperienced	\$12 per wk.
	All other manufacturing....	Women and minors:	
		Experienced	\$16.50 per wk.
	Student nurses.....	Women:	
		First year.....	\$4 per mo.
		Second year.....	\$6 per mo.
		Third year.....	\$8 per mo.
	Office occupation.....	Women and minors:	
		Experienced	\$20 per wk.
		Inexperienced	\$14 per wk.

TEXAS

Date of Award	Occupations or Industries	Classes of Employees	Amount of Wage
Nov. 20, 1920...	Telephone or telegraph office, mercantile establishment, laundry or factory.	Females or minors: Experienced	\$12 per wk.; \$0.25 per hr. for all hours in excess of 48 per week.
		Inexperienced	\$0.15 per hr.

WASHINGTON

June 2, 1920...	Public housekeeping.....	Any female over 18 years of age.	\$18 per wk.; \$3 per day; \$0.87½ per hour.
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MINNESOTA. POPULATION. According to the preliminary report of the census of 1920, there were 2,387,125 residents in the State, Jan. 1, 1920, as compared with 2,075,708 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 178,588, an increase of 14.4 per cent since 1910. The following table is compiled from the estimate of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	3,150,000	118,125,000	\$80,244,000
	1919	2,900,000	116,000,000	139,200,000
Oats	1920	3,378,000	126,488,000	45,536,000
	1919	3,275,000	91,700,000	56,860,000
Barley	1920	1,000,000	25,000,000	15,500,000
	1919	910,000	18,200,000	21,112,000
Wheat	1920	3,001,000	29,116,000	37,851,000
	1919	3,865,000	36,315,000	90,788,000
Flaxseed ...	1920	320,000	3,040,000	5,568,000
	1919	272,000	2,312,000	10,288,000
Rye	1920	480,000	8,160,000	9,955,000
	1919	525,000	7,875,000	10,238,000
Hay	1920	3,683,000	5,762,000	67,212,000
	1919	3,680,000	6,253,000	88,461,000
Potatoes ...	1920	295,000	28,025,000	22,420,000
	1919	310,000	82,760,000	41,264,000

* Tons.

FINANCE. Figures for receipts and expenditures during 1920 were not available. The report of the Public Examiner showed the State's assets, June 30, 1920, at \$64,537,569, declaring, however, that "no accounting records are kept which will disclose the true status of the State's financial condition." The principal sources of the State's income in the fiscal year 1920 and their respective percentages of the total income were as

and property, 7; development and conservation of natural resources, 4; pensions and relief, 4; reduction of indebtedness, 4.

TRANSPORTATION. Total mileage of main lines of railways operating in the State Jan. 1, 1920, 9045.46, a decrease of 33.83 miles during the year. The mileage of terminal and switching roads was 185.20.

EDUCATION. For the year ending July 31, 1920 the number of pupils enrolled in high schools was 49,060; average attendance, 41,043; the number enrolled in graded schools, 182,439; average attendance, 164,553; number of teachers in public schools, 19,575; average monthly salary of teachers in high and graded school districts, \$152 for men and \$95.40 for women; in rural and semi-graded school districts, \$89.60 for men and \$74.62 for women. In respect to teachers' efficiency the State department of education reported for the two-year period ending, July 31, 1920 as follows:

There is increasing efficiency of the teaching force, 87 per cent of whom are normal graduates with college training with 85 per cent of this number holding college degrees. Significant features of the enrollment, too, have been girls of greater maturity, a greater per cent of high school graduates and an increased number of country-bred girls. The average age of the graduates for the biennium has been eighteen and one-third and eighteen and three-fourths respectively. A gain of nearly one-half year is indicated during this period. Thirty-four and nine-tenths of the 1919-20 enrollment as compared with thirty-one and eight-tenths for the previous year were high school graduates.

CHARITIES AND CORRECTIONS. The institutions under the State Board of Control with their situation and population in 1920 are as follows:

Institution	Situation	Population June 30, 1920
Anoka State Asylum.....	Anoka	860
Hastings State Asylum.....	Hastings	894
Willmar State Asylum*.....	Willmar	268-2
Fergus Falls State Hospital.....	Fergus Falls	1,496
Rochester State Hospital.....	Rochester	1,276
St. Peter State Hospital.....	St. Peter	1,296
School for Feeble-Minded	Faribault	1,742
School for the Blind	Faribault	106
School for the Deaf	Faribault	254
State Public School	Owatonna	311
State Training School for Boys.....	Red Wing	285
Home School for Girls.....	Sauk Centre	328
State Reformatory for Women (New).....	Shakopee	20
State Reformatory	St. Cloud	413
State Prison	Stillwater	849
Sanatorium for Consumptives.....	State Sanatorium	218
Hospital for Crippled Children.....	St. Paul	126
Total		10,738

* 2 Inebriates.

from State institutions, 22; interest, 5; loans redeemed, 5; income from State lands, 5; fines, fees, and penalties, 4.5. The chief items of expenditures for that year with respective percentages of total were: Education and recreation, 33.5 per cent; charities and correction, 25; loans, 9; highways, 7.5; protection of persons follows: General taxes, 55 per cent; income

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 519,421; Cox (Democrat), 142,994; Debs (Socialist), 56,106; Prohibitionist, 11,489; Socialist Labor, 5828; as compared with the following vote in the presidential election of 1916, Hughes (Republican) 179,544; Wilson (Democrat), 179,152; Benson (Socialist), 20,117; Prohibitionist, 7793.

The vote for governor was: Preuss (Republican), 415,805; Shipstead (Independent), 281,402; Hodgson (Democrat), 81,293. The following proposals submitted to popular vote received majorities: Authorization of a trunk highway system; taxation of motor vehicles; subjecting to assessment realty used for railway purposes.

OFFICERS. Governor, J. A. O. Preuss; Lieutenant Governor, Louis L. Collins; Secretary of State, Mike Holm; Auditor, Ray P. Chase; Treasurer, Henry Rines; Attorney-General, Clifford L. Hilton; Commissioner of Education, J. M. McConnell; Superintendent of Banks, F. E. Pearson; Commissioner of Insurance, Gustav Lindquist; Commissioner of Agriculture, N. J. Holmberg.

MINNESOTA, UNIVERSITY OF. A non-sectarian, State institution, at Minneapolis, Minn., founded in 1868. For the summer session of 1920, there were 2025 students enrolled and for the regular fall session 7437. The faculty numbered about 1050, including 250 new teachers. The permanent university fund from sales of land, timber, mineral leases, and royalties on ore amounted to \$1,978,191 and the interest on the fund came to \$79,672.61. Interest on the Swamp Land Fund amounted to \$51,119.65. There were 350,000 volumes in the library. President, Lotus Delta Coffman.

MISSISSIPPI. POPULATION. According to the preliminary report of the census of 1920, there were 1,790,618 residents in the State, Jan. 1, 1920, as compared with 1,797,114 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 272,437, a falling off of 0.7 per cent since 1910. The following table is compiled from the estimate of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	3,980,000	63,680,000	64,954,000
	1919	3,980,000	59,700,000	95,520,000
Oats	1920	236,000	4,012,000	3,490,000
	1919	278,000	4,448,000	4,670,000
Hay	1920	467,000	779,000	13,504,000
	1919	454,000	717,000	14,747,000
Potatoes ...	1920	16,000	1,892,000	2,784,000
	1919	18,000	1,530,000	3,520,000
St. Potatoes.	1920	103,000	11,330,000	11,896,000
	1919	98,000	10,290,000	11,525,000
Cowpeas ...	1920	300,000	2,400,000	5,088,000
	1919	40,000	160,000	400,000
Sorg'm Syrup	1920	72,000	6,480,000	5,832,000
	1919	60,000	5,100,000	4,845,000
Cotton	1920	3,024,000	885,000	67,702,000
	1919	2,848,000	961,000	180,166,000

* Tons. * Gallons.

FINANCE. Cash on hand, Oct. 1, 1918, \$1,705,402; receipts during the year ending, Oct. 1, 1919, \$7,235,340; expenditures, \$5,837,692; cash on hand, Oct. 1, 1919, \$1,397,647.

ELECTIONS. The vote in the presidential election of 1920 was: Cox (Democrat), 69,277; Harding (Republican), 11,576; Debs (Socialist), 1639; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 80,422; Hughes (Republican), 4253; Benson (Socialist), 1484. Women did not vote owing to the four months' clause in the primary law, which, according to the decision of the Attorney-General debarred them from voting. Governor Lee M. Russell (Democrat) was elected without opposition.

MISSISSIPPI, UNIVERSITY OF. A non-sectarian co-educational State institution of the higher learning at University, Miss., founded in

1848. There were 605 students enrolled for the regular fall session of 1920, and 147 in the summer session. There were 37 members in the faculty. The biennial State appropriation amounted to \$150,000 for expenses, etc. The library contained 31,000 volumes. Chancellor, Joseph Neely Powers, LL.D.

MISSISSIPPI RIVER. See FLOOD PROTECTION.

MISSOURI. POPULATION. According to the preliminary report of the census, of 1920, there were 3,404,055 residents in the State, Jan. 1, 1920, as compared with 3,293,335 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 263,124, a falling off of 5.1 per cent since 1910. The following table is compiled from the estimate of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	6,215,000	198,880,000	\$127,283,000
	1919	5,650,000	152,550,000	210,519,000
Oats	1920	1,775,000	54,138,000	26,528,000
	1919	1,675,000	45,225,000	32,110,000
Wheat ...	1920	2,617,000	32,721,000	52,854,000
	1919	4,445,000	59,833,000	125,051,000
Tobacco...	1920	8,000	6,000,000	1,980,000
	1919	5,000	5,000,000	1,800,000
Hay	1920	3,282,000	4,058,000	69,073,000
	1919	2,910,000	3,903,000	75,685,000
Potatoes..	1920	95,000	7,790,000	11,763,000
	1919	100,000	7,500,000	13,800,000
S. Potatoes	1920	13,000	1,430,000	2,216,000
	1919	12,000	1,248,000	2,334,000
S'm Sirup	1920	49,000,000	4,067,000	5,084,000
	1919	35,000,000	3,115,000	3,987,000
Cotton ...	1920	148,000	85,000	5,788,000
	1919	125,000	64,000	10,885,000

* Pounds. * Bales. * Tons. * Gallons.

FINANCE. Balance, Jan. 1, 1919, \$3,922,716; receipts during 1919 and 1920, \$46,907,846; disbursements during 1919 and 1920, \$38,407,289; balance Dec. 31, 1920, \$12,423,273. Total State debt at end of the year 1920, \$4,398,839. It consisted of one 6 per cent school fund certificate of indebtedness of \$2,909,000; six 5 per cent school fund certificates of indebtedness amounting to \$250,000; one 6 per cent seminary fund certificate of indebtedness for \$122,000, and twenty-one 5 per cent seminary fund certificates of indebtedness amounting to \$1,117,839.42.

EDUCATION. The total enumeration in 1920 was 905,911; enrollment, 672,483; average daily attendance, 531,221. Teachers number 21,126 of whom 17,701 were female. The average monthly salary of teachers in districts not maintaining a high school was \$89 for men, and \$65 for women. In respect to salary the superintendent made the following recommendation: "In view of the fact that teachers must spend much time and money in preparation there should be a minimum wage law enacted establishing a scale of salaries based on training, experience and efficiency. No teacher in the State should receive less than \$100 per month. The Legislature should pass a teachers' minimum wage law guaranteeing to every teacher a living wage."

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 727,162; Cox (Democrat), 574,799; Debs (Socialist), 20,224; Watkins (Prohibitionist), 5142; Christensen (Farmer-Labor), 3291; Cox (Socialist Labor), 2164; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 398,032; Hughes (Republican), 369,339; Benson (Socialist), 14,612; Hanly (Prohibitionist), 3884. The vote for governor was:

Hyde (Republican), 722,024; Atkinson (Democrat, 580,626; Aldrich (Socialist), 19,489; Middlecuff (Socialist Labor), 1620; Faris (Prohibitionist), 3974; Hickman (Farmer-Labor), 3003; and for United States Senator: Spencer (Republican), 711,161; Long (Democrat), 589,498; Hodges (Socialist), 20,002; Mallette (Farmer-Labor), 9158; Tinnell (Socialist Labor), 1675. A referendum on the enforcement of prohibition throughout the State resulted in an affirmative vote.

OFFICERS. Governor, Arthur M. Hyde; Lieutenant-Governor, Hiram Lloyd; Secretary of State, Charles U. Becker; Auditor, George E. Hackmann; Treasurer, L. D. Thompson; Attorney-General, Jesse W. Barrett; Superintendent of Public Schools, Samuel A. Baker.

JUDICIARY. Supreme Court: Conway Elder, James T. Blair, Archelaus M. Woodson, Waller W. Graves, Edward Higbee, David E. Blair, Robert F. Walker.

MISSOURI, UNIVERSITY OF. A non-sectarian, co-educational institution of the higher education at Columbia, Mo., founded in 1840. The enrollment for the spring-summer session of 1920 was 873 men and 711 women; for the regular fall term of 1920, 2262 men and 998 women. The teaching staff had 300 members. The annual income amounted approximately to \$1,333,333. There were 240,000 volumes in the library. A gift of a new building for the School of Journalism was made by Mr. Ward A. Neff of Chicago. President, A. Ross Hill.

MOLDAVIA. The northern division of Roumania. Area, before the war, 14,759 square miles; population (1913), 2,145,465. Chief towns with their populations before the war: Jassy, 76,120; Galatz, 73,512; Botushani, 32,874; Barlad, 25,367; and Focsani, 25,287.

MONACO. A principality on the Mediterranean, surrounded by the French department of the Alpes Maritimes, except on the coast; celebrated for the gambling resort, Monte Carlo. Area, 8 square miles; population (1913), 22,956. The chief towns are La Condamine, 11,082; Monte Carlo, 9027; and Monaco, 2247. It is under a prince who was an absolute ruler till Jan. 7, 1911, when a constitution was proclaimed providing for a national council, elected by universal suffrage. The executive power is in the prince, assisted by a council of state. The Prince in 1920 was Albert, born Nov. 13, 1848.

MONEY. The accompanying table shows coin and paper circulation of the United States for the fiscal years 1913 to 1920, inclusive (see also **FINANCIAL REVIEW; GOLD; and SILVER**):

Year ending June 30	Coin, including bullion in Treasury	United States notes and bank notes	Total money	Coin, bullion, and paper money in Treasury, as assets	Circulation	Population	Circulation per capita
1913.....	2,611,571,094	1,108,498,922	3,720,070,016	356,381,567	3,363,788,449	97,837,000	34.56
1914.....	2,638,496,956	1,099,791,915	3,738,288,871	336,273,444	3,402,015,427	99,027,000	34.35
1915.....	2,739,241,077	1,250,215,109	3,989,456,186	420,236,612	3,569,219,574	100,725,000	35.44
1916.....	3,206,867,812	1,276,024,126	4,482,891,938	458,761,371	4,024,130,567	102,431,000	39.29
1917.....	3,785,690,795	1,692,299,381	5,407,990,026	644,414,394	4,763,575,632	104,145,000	45.74
1918.....	3,807,161,848	2,983,910,946	6,741,072,294	1,861,644,870	5,379,427,424	105,869,000	50.81
1919.....	3,577,607,287	3,941,181,713	7,518,789,000	1,752,759,027	5,766,029,973	106,186,000	54.33
1920.....	3,221,676,433	4,672,821,666	7,894,498,099	1,806,943,012	6,087,555,087	106,414,000	58.30

MONGOLIA. A large and ill-defined territory dependent on China, situated to the west of Manchuria. Area, about 1,367,600 square miles; population about 2,600,000. By the convention of Nov. 3, 1912, Russia recognized Mongolia's

right of self-government and undertook to guarantee the country from colonization by the Chinese. Its status was virtually that of a Russian protectorate. On Nov. 5, 1913, Russia recognized Outer Mongolia as under Chinese protection. After the overthrow of the Czar and the establishment of the Soviet government in Russia the arrangement with Russia was ineffective and on Nov. 22, 1919, China so declared, and agreed with the Mongolian government to the annexation of Mongolia to the Chinese Republic.

MONTANA. POPULATION. According to the preliminary report of the census of 1920, there were 548,889 residents in the State Jan. 1, 1920, as compared with 376,053 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 57,441, an increase of 119.1 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture covering the years 1919 and 1920:

Crop	Year	Acreage	Prod., Bu.	Value
Corn	1920	179,000	3,580,000	\$2,864,000
	1919	128,000	1,728,000	2,851,000
Oats	1920	600,000	16,000,000	8,568,000
	1919	650,000	6,110,000	5,560,000
Wheat	1920	1,750,000	19,850,000	25,408,000
	1919	2,250,000	10,650,000	25,028,000
Hay	1920	1,342,000	1,991,000	4,275,000
	1919	1,202,000	910,000	3,555,000

* Tons.

MINERAL PRODUCTION. The value of the gold, silver, copper, lead, and zinc mined in Montana in 1920, according to the estimates of the United States Geological Survey, Department of the Interior, was about \$64,685,000, an increase of about \$2,648,000 as compared with the value in 1919. The output of zinc increased materially over that in 1919, and the output of copper increased slightly, but the output of gold, silver, and lead decreased. The value of the output of gold fell from \$2,229,588 in 1919 to about \$1,742,000 in 1920, a decrease of nearly 22 per cent. The production of gold from siliceous and iron ores was greatly reduced, and the output from dredges was somewhat less. The output of the copper mines, which produce most of the gold, did not reach the normal, though it was greater than that of 1919. The mine output of silver decreased from 12,541,181 ounces in 1919 to about 12,427,000 ounces in 1920, and the value of the output decreased from \$14,046,123 to about \$13,551,000. Montana remained the leading silver producer of the United States, though Utah was a close second. In 1920, as in past years, most of this silver came from copper ores, but a

large part of it was obtained by smelting residues from zinc ores. The output of copper increased from 169,981,288 pounds in 1919 to about 176,600,000 pounds in 1920, which represents an increase of nearly 4 per cent in quantity but a de-

crease of \$1,377,000 in value. The mine production of lead decreased from 34,437,764 pounds in 1919 to about 32,144,000 pounds in 1920, but the value of the output increased from \$1,825,201 to about \$2,623,000, as the average price of lead was higher. The output of recoverable zinc in Montana increased from 168,763,823 pounds in 1919 to about 203,953,000 pounds in 1920, which was close to the record of 1918. The value of the output increased from \$12,319,759 to about \$16,520,000.

MANUFACTURES. The preliminary figures of the United States Bureau of the Census showed a consistent increase at the census of 1919, as compared with that for 1914. In the order of their importance from a percentage standpoint, the increases for the several items ranked as follows: Cost of materials, 161.8 per cent; value of products, 131.7 per cent; value added by manufacture, 94.2 per cent; wages, 90.4 per cent; primary horsepower, 84.4 per cent; capital, 73.5 per cent; salaries, 70.6 per cent; proprietors and firm members, 44.2 per cent; number of establishments, 37.8 per cent; salaried employees, 27.6 per cent; and wage earners, 25.3 per cent. The capital invested, as reported in 1919, showed a gain of \$58,253,000, or 73.5 per cent, over that in 1914. The average capital per establishment was approximately \$106,000 in 1919 and \$84,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$75,646,000 or 161.8 per cent. The average cost of materials per establishment in 1919 was approximately \$95,000, and in 1914 \$50,000. The value of products in 1919 showed an increase over that in 1914 of \$111,178,000, or 131.7 per cent. The average per establishment in 1919 was approximately \$151,000 and in 1914 \$90,000. The value added by manufacture in 1919 showed an increase over that in 1914 of \$35,532,000 or 94.2 per cent. The value added by manufacture in 1919 formed 37.4 per cent of the total value of products and in 1914 44.6 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 505, or 27.6 per cent, while the average number of wage earners increased 3462, or 25.3 per cent. A comparative summary for the State for 1914 and 1919 follows:

	Census—		Per cent. of increase, 1914-1919
	1919	1914	
Number of establishments.....	1,294	939	37.8
Persons engaged in manufactures.....	20,698	16,363	26.5
Proprietors and firm members.....	1,200	882	44.2
Salaried employees.....	2,332	1,827	27.6
Wage earners (average number).....	17,166	13,704	25.3
Primary horsepower.....	169,056	91,671	84.4
Capital.....	\$187,499,000	\$79,246,000	73.5
Services.....	29,493,000	15,780,000	86.9
Salaries.....	4,741,000	2,779,000	70.6
Wages.....	24,752,000	13,001,000	90.4
Materials.....	122,390,000	46,744,000	161.8
Value of products.....	195,624,000	84,446,000	131.7
Value added by manufacture (value of products less cost of materials).....	78,284,000	37,702,000	94.2

EDUCATION. The total common school population of Montana in 1920 was 161,626; enrollment 126,238; average daily attendance 90,566; total number of teachers 7215; average salary of men teachers \$137 a month, of women \$111 (exclusive of superintendents and principals). Total expenditures for school purposes 1920, \$12,700,000. Upon the admission of the State to the union the common schools had a land grant totaling 5,223,920 acres of which under the law none

could be sold for less than \$10 an acre. Down to 1920, 977,134 acres had been sold yielding to the permanent school fund the sum of \$17,518,965. The results of an investigation under the Russell Sage Foundation published in 1920 showed that Montana stood first among all the States in the Union in the following respects: Percentage of school population attending school daily; in average number of days attended by each child of school age; in average expenditure per child; in the expenditure per pupil for purposes other than for teachers' salaries.

FINANCE. Receipts of Montana in 1919 were \$9,808,856 and disbursements \$10,314,886; in 1920 receipts were \$11,463,648 and disbursements \$12,264,544.

OFFICERS. Governor, Joseph M. Dixon; Lieutenant-Governor, Nelson Story; Attorney-General, W. D. Rankin; Secretary of State, C. T. Stewart; Treasurer, J. W. Walker; Auditor, G. P. Porter.

JUDICIARY. Supreme Court: Chief justice Theodore Brant; associate justices, W. L. Holloway, A. J. Galen, F. B. Reynolds, C. N. Cooper.

MONTANA, UNIVERSITY OF. A non-sectarian, co-educational State institution of the higher learning at Missoula, Mont., founded in 1895. In the summer session there were 83 men and 296 women enrolled, and for the regular fall session there were 474 men and 448 women. There were 67 members of the faculty. The productive funds or income amounted to \$320,000. There were 50,000 volumes in the library. At the general election of Nov. 2, 1920, an initiative measure providing for a general tax of 1½ mills for the maintenance of the higher educational institutions in Montana was approved; also a measure providing for the issue of bonds for \$3,750,000 for construction and equipment of buildings. The State University was to share in the benefits of these measures. President, Edward O. Sisson, Ph.D.

MONTENEGRO. A Balkan state, bounded by Serbia on the east, Albania on the south, Dalmatia on the west, and the Herzegovina on the west and north; an independent constitutional monarchy until the occupation by the Germans and Austrians at the close of 1915; after Dec. 1, 1918, a part of the newly formed Jugo-Slav state

known as Jugo-Slavia and consisting of Serbians, Croats, and Slovenes. Area, before the war, 5603 square miles; population, Jan. 1, 1917, 436,789. Capital, Cetinje, with an estimated population of 5500. Other towns with estimated populations are: Podgoritz, 14,000; Ipek or Petz, 14,000; Dulcigno, 5000; Djakova or Djakovitz, 23,000; Plevlje, 7000; Bielo Polje, 6300. Agriculture is largely pursued, but the methods are primitive. The chief crops are corn, oats,

tobacco, potatoes, barley, and buckwheat. See JUGO-SLAVIA.

The ultimate status of Montenegro had not been determined in 1920. The government on September 27th sent out a report which had been made by a committee of investigation, setting forth the bad conditions of the country under Serbian occupation. This recommended the rejection of the vote of the National Assembly which had been taken in Serbia to mean the annexation of Montenegro. At the close of the year Montenegro was still demanding her independence and territorial expansion by the inclusion of the Herzegovina and a portion of the coast. Urging the immense sacrifices she had made for the Allies during the war, she demanded that the restoration of her nationality should be separated entirely from the general problem of the Adriatic.

MONTREAL, QUE. See CITY PLANNING; MUNICIPAL GOVERNMENT.

MONTSERRAT. A presidency of the Leeward Islands (q.v.).

MOORE, TEMPLE. British architect, died in London, in July. He was born in 1856 and after studying architecture, rose rapidly in his profession and became one of the leading architects of the country. His works which were mainly modeled on the English Gothic of the fourteenth century were widely scattered throughout England. By many he was regarded as the foremost church architect of his time. His buildings include the church of All Saints at Basingstoke and the chapel and buildings of Pusey House, Oxford. In later years he attempted an older style of church architecture dating from the thirteenth century.

MORANT, Sir ROBERT LAURIE. British official, died in London, March 13. At the time of his death he was the chief permanent secretary to the ministry of health. He was born April 7, 1863, and educated at Winchester and Oxford. He was the organizer of public education in Siam where he was tutor to the Royal Family; and he issued a number of educational works in the Siamese language. In 1895 he was Assistant Director of Special Inquiries and Reports in the British educational department, and under his direction various reports on education in England, France, Switzerland, and other countries were issued. He was active in the preparation of the Education Bill of 1903. During the controversy over the National Insurance Act, he was appointed to the chairmanship of the Insurance Commission, a position demanding great tact and ability. His skill in administering the act was highly applauded.

MORAVIA. Before the downfall of the Austro-Hungarian Monarchy, a crownland of Austria; bounded by Russia, Austria, Silesia, and Hungary; included toward the end of 1918 in the new state of Czecho-Slovakia (q.v.). Area, before the war, 8584 square miles; population estimated in 1913 at 2,666,613. According to the census of 1910, 1,868,971, or 71.75 per cent spoke Bohemian. Capital, Brunn, with a population in 1910 of 126,737.

MORAVIANS. This denomination, of which there are three branches, was founded in Bohemia in 1457 and began work in this country in Georgia in 1735 as a missionary enterprise. The three branches at present are, Moravian Church (Unita Fratrum), Bohemian and Moravian Brethren (Evangelical Union), and Independent Moravian Churches of which there are

three. The largest of these branches is the Unitas Fratrum, or Moravian Church, which had in 1920, 22,209 communicants, 1550 non-communicants, with 155 ministers and about 140 churches. This shows a slight increase over 1919. Sunday school pupils numbered 17,172, a marked increase over 1919. Missionary work is carried on in 18 fields, where to January, 1920, there were 104,962 converts. The American, British, and European branches of the church join in the support of this work. There are seven educational institutions, the principal one being the Moravian College and Theological Seminary at Bethlehem, Pa.

The Evangelical Union of Bohemian and Moravian Brethren had in 1920 about 1000 communicants with 21 churches and four ordained ministers. Independent Moravian Churches had about 400 communicants in the three churches.

MORDECAI, ALFRED. Army officer, died, January 20. He was born at Philadelphia, Pa., Jan. 20, 1840; graduated at the Military Academy in 1861 and served throughout the Civil War, rising to the rank of captain, June 1, 1863. After engaging in the operations against Charleston, S. C., he was made Chief of Ordnance of the army of the James and later of the army of Tennessee and the army of the Cumberland. On September 6, 1863, he was brevetted major for gallant and meritorious service and on March 13, 1865, he was brevetted lieutenant-colonel for distinguished service in the field and for his work in the Ordnance Department during the war. After the war he taught ordnance and gunnery in the United States Military Academy and was later in command of several arsenals. On Jan. 20, 1904, he was retired after over 40 years of service.

MOREHOUSE, JAMES T. Physician, died at West Orange, N. J., December 20. He was born at Newark, N. J., in 1863, and graduated at the College of Pharmacy in New York and from the New York University. He was engaged for 30 years in X-ray experiments and practice and was one of the pioneers in that field. His death was caused by burns received in the course of his numerous experiments.

MOREIRA, DELPHIM. Vice-president of Brazil, died at Rio de Janeiro, July 2. From Nov. 15, 1918, until July 19, 1919, he was acting-president of the republic on account of the illness of the president-elect. He was born at Christiana, Brazil, Nov. 7, 1868; studied law and entered upon a political career, at an early age, being elected deputy of the legislature of the state of Minas in 1894. He was afterwards appointed to an office in the state administration and was state senator in 1907 and 1908. In 1914 he was elected governor of the state of Minas. During his early career, he had specialized in the subjects of economics and education. He was elected vice-president for the term 1918-22, and immediately upon inauguration, became acting-president. He was regarded as one of the ablest and most progressive of the Brazilian statesmen.

MOROCCO. The largest of the Barbary states, a sultanate in Africa, mainly under French protection, situated in the northwestern part of Africa, between 27° and 36° north latitude and 1° and 11° 40' west longitude. It comprises the kingdom of Fez and Morocco, north of the Atlas mountains, and the territories of Sûs, Brâ, Wadi Taflet, Tuat, and others to the

south, which are subdivided into 33 districts each under a "kaid." The chiefs of the semi-independent tribes scarcely admit the rule of the sultan. The total area is about 231,500 square miles of which Spain claims about 10,000 square miles in the north zone and 960 square miles in the region of Ifni on the west coast. The total population has been roughly estimated at 6,000,000, of whom 5,400,000 are in the French zone and the remainder in the Spanish zone and Tangier. One of the chief seaports is Tangier, with a population roughly estimated at 60,000. Under the Franco-Spanish convention at Madrid signed Nov. 27, 1912, Tangier and its district comprising 140 square miles was separated from the Spanish zone and was placed under a special administration. See below under *History*.

FRENCH MOROCCO. The chief towns in French Morocco with their populations are as follows: Rabat, the capital, 37,548; Casablanca, 86,000; of whom 41,500 were Europeans; Marakesh, 119,447 (1447 Europeans); Fez, 105,855 (855 Europeans); Meknes, 36,765 (1265 Europeans). There is little immigration except to the towns especially the seaports. Agriculture is in a somewhat primitive state, though the soil is capable of extensive cultivation. Among the chief products are: live stock, especially hogs, eggs, fruits, vegetables, hides, and skins. Fishing is a thriving industry as sardines and tunny fish are plentiful. There are rich mineral deposits of iron, copper, lead, antimony, silver, sulphur, gold, and phosphates. Recently immense deposits of high-grade phosphate rock were discovered and the following information in regard to it was supplied by the United States Geological Survey for 1920. In times of peace Morocco has in a single year sent abroad, mostly to Europe, 1,250,000 long tons or more of high-grade phosphate rock, or more than 40 per cent of its total annual output. The exports decreased during the war until, in 1918, they amounted to only 143,000 tons, or 6 per cent of the domestic output. They increased to 379,000 tons in 1919, but these reports of newly discovered large deposits in Morocco, which, like those in Algeria and Tunis, are near to the large fertilizer market in southern Europe, may mean that the American exporter of phosphate rock will have formidable competition in that region. The principal deposits in Morocco are about 80 miles southeast of Casablanca and consist of three beds or series of beds of phosphatic sand in a formation that is 50 to 200 feet thick. The uppermost phosphatic bed contains 67 per cent of tricalcium phosphate, the middle bed 30 per cent, and the lower beds 53 per cent, and the commercial average for the group is about 59 per cent. Water and hydro-electric power for the exploiting of the deposits can be obtained from a river near by. In order to market the rock, however, a railroad would have to be built from the deposits to Casablanca, the nearest port. Another deposit, which consists of soft phosphatic material carrying 72 to 75 per cent of tricalcium phosphate, lies 40 miles northeast of the principal one. Still another deposit lies a short distance southeast of Rabat, a coast town. This deposit consists of sandy clay 16 feet thick containing nearly 47 per cent of tricalcium phosphate. All these deposits are reported to be large and rich, but no data available show their extent or value. Their development will doubtless be retarded by the necessity of making large

investments for railroad and other construction and by the consideration that the shortage of phosphate in Europe has been due to difficulties in the Mediterranean shipping service rather than to lack of developed deposits of phosphate rock in northern Africa. Only those newly discovered deposits that are very rich and easily accessible, if there are such, can contribute soon and effectively to the world's trade in phosphate rock.

No later figures for commerce, finance, etc., were available than those given in the preceding *YEAR BOOK*. The railways comprised the military railway recently completed from Casablanca to Fez, 211 miles long; a line from Casablanca to Marakesh, 134 miles, etc. Total length about 604 miles. During the year announcement was made of an agreement between the Moroccan protectorate and a group made up of the Paris-Lyons-Mediterranean and the Paris-Orleans railways, the *Compagnie Generale of Morocco* and the *Compagnie Marocaine* for the construction of a 1.44 meter (4 feet 8½ inches) gage railway in Morocco at a cost of approximately 970,000,000 francs.

The sultan in 1920 was Mulia Yusef. He was proclaimed Aug. 18, 1912. His power was formerly absolute, but since the establishment of the French protectorate he is obliged to follow the advice of the French resident-general in all matters. The French resident-general in 1920 was General Lyautey, re-appointed April 7, 1917.

SPANISH MOROCCO. The chief cities in the Spanish zone are Tetuan, 18,066 (3650 Europeans); Larache, 16,283 (3765 Europeans); Alcazar, 11,942 (1828 Europeans); Arzila, 2857 (1000 Europeans). The Spanish zone, which extends from the Algerian border to the sea and westward to Alcazar and thence to the Atlantic is under a Spanish high commissioner and a Kalifa chosen by the Sultan from candidates presented by the Spanish government. The Spanish high commissioner in 1920 was Gen. Damaso Berenguer.

HISTORY. Both in French and Spanish Morocco there were difficulties with the tribesmen in the course of the year. In French Morocco two columns of troops on September 18 made a campaign into the mountains to the south and east of Wazzan. They encountered some resistance along their march, but immediately upon arrival in the hostile country the chiefs and all their tribes surrendered. It was reported that within a week normal conditions were restored. The loss to the French was one officer killed, two officers wounded and 12 casualties among the men. The prompt success was attributed to the new policy that seemed to have been undertaken of making a very large show of force. This plan was followed also by the Spanish commander. In the autumn there were difficulties in Spanish Morocco with the Riff tribes. The Spanish forces surrounded the mountain region occupied by the rebels and waited for them to surrender. The surrender occurred on October 1.

There was much concern expressed in the French newspapers during the year over Spain's activity at Tangier and what was called an anti-French campaign on the part of the Spanish papers. In Spain there had been for a long time frequent mention of a Spanish protectorate. According to the French, it was the French protectorate which had maintained Tangier during the war and which would have to supply the

necessary funds for restoring the finances of the city. The Spanish zone does not include the city which has been under a special regime since 1912. The French had organized at Tangier, many of the important institutions of education and public charity. They had, in fact, created the economic life of Tangier and nearly all the industrial and commercial houses, building enterprises, fisheries, mills, printing houses, etc., were French. As to commerce, France had 50 per cent of the general commerce as compared with 20 per cent for England and 16 per cent for Spain, and the French possessed about 80 per cent of the real estate, together with all the lots near the beach. The value of French capital at Tangier was placed at 150,000,000 francs. Most of the banks were French and the state bank under international control had a French president and for the most part a French personnel. Real estate transactions could not be concluded without the consent of French agents. In the harbor the French merchant marine was predominant and France led in the total tonnage, in the average value of merchandise per ton, and in the value of imports. Moreover, the French colony was the most active, including engineers, doctors, lawyers, merchants, etc., and French was the current language of commerce. That Tangier's sympathies were largely French appeared from the heavy subscriptions to the war loss. Toward the end of the year commercial and industrial bodies at Marseilles appealed to the president to put an end to the uncertain state of things resulting from the pretensions of Spain. A French journal presenting the arguments concluded with the statement that Tangier is the outlet of Fez-Meknes and of the French Gharb and that it would be absurd, since Spain controlled Ceuta, and England, Gibraltar, if France were not represented on the shores of the Strait.

MOBBISON, GEORGE ERNEST. British journalist, died, May 30. From 1895 to 1912 he was the *Times* correspondent at Peking and from that time on was political adviser to the President of the Chinese Republic. He was born in Victoria, Australia, Feb. 4, 1862, and was educated at the universities of Melbourne and Edinburgh. In his early career he was well known as a traveler and explorer. He crossed the continent of Australia on foot from the Gulf of Carpentaria to Melbourne, 1882-03, and traveled from Shanghai to Rangoon by land in 1894. While writing for the *Times* he journeyed from Bangkok in Siam to Yunnan in China and around Tonking. During the siege of the Legations in China he was in the city of Peking and he was present when the Japanese troops entered Port Arthur in triumph. He represented the *Times* at the Portsmouth Peace Conference in 1905. It was said of him that he had traveled in every province of China with the exception of Tibet. Aside from his voluminous newspaper work, he published *An Australian in China*.

MORTON, LEVI PARSONS. Former Vice-President of the United States in the Harrison administration, died at Rhinebeck, N. Y., May 16, 1920. He was born at Shoreham, Vermont, and educated at the academy there; then went into business (1843) in Hanover, N. H. He removed to Boston in 1850 and entered the banking business in which he advanced rapidly and in 1863 he founded the banking house of Levi P. Morton and Company, which was subsequently

changed to Morton, Bliss and Company, and became one of the successful banking establishments of the country. In 1875 he embarked in a wider field of finance and founded a New York syndicate. Soon afterwards he became active in politics. He was elected to Congress as a Representative in 1878; was appointed minister to France in 1882; and ran as Vice-President with Harrison in the campaign of 1888. In 1895-6 he was governor of New York. In his administration the local trustee system of school government was abolished. After retiring from public life he resumed the banking business and became interested in insurance companies. He was known throughout his career as a generous giver to works of public welfare.

MOSES, ALFRED JOSEPH. Mineralogist, died in New York City, February 27. He was born at Brooklyn, N. Y., April 25, 1859, graduated at the Columbia School of Mines in 1882; became an assistant in mineralogy there in the same year and was professor of mineralogy after 1890. He wrote: *Mineralogy; Crystallography and Blowpipe Analysis* (1895); *Characters of Crystals* (1898); and contributed to the leading learned periodicals within his sphere of interest. His work was highly esteemed in all branches of his profession. The text-book on mineralogy was a standard manual in the majority of the universities in which the study was pursued, and he was among the first to recognize the primary importance of physical crystallography. In publishing the results of his research he showed scrupulous care in the matter of verification and a high regard for lucid and compact expression.

MOSLER, HENRY. Artist, died, April 21. He was born in New York City, June 6, 1841, and in his youth became a draughtsman for a Cincinnati weekly. During the Civil War he was art correspondent for *Harper's Weekly* with the Western Army and was appointed to the staff of Gen. R. W. Johnson. He afterwards studied in Germany and France. He received honorable mention at the Salon in 1879 and the French government in that year purchased for the Musée de Luxembourg, his painting, "Le Retour." He was the recipient of many honors and prizes, including the Salon Gold Medal of 1888, and he was an officer of the Legion of Honor and the Academy of France.

MOSS, FRANK. Lawyer, died, June 5. He was born at Cold Spring, N. Y., March 16, 1860, and studied at the College of the City of New York: He figured in many well-known cases and was president of the Board of Police in New York City, 1897. He served as associate counsel to the Lexow Investigating Committee, and was leading counsel on the Mazet Investigating Committee. From 1909 to 1914 he was senior assistant district attorney. In addition to other offices, he held the professorship of medical jurisprudence at the New York College and Hospital for Women, and was president of the New York Ophthalmic Hospital. He wrote the history of New York under the title of, *The American Metropolis* (1897) and *America's Misson* (1918).

MOTHERS' PENSIONS. See SOCIAL INSURANCE.

MOTOR BOATING. See YACHTING.

MOTOR TRUCKS. See GARBAGE.

MOTOR VEHICLES. See AUTOMOBILES.

MOTT, GARRET SCHENK. Inventor, died at White Plains, N. Y., December 4. He was one

of the early inventors in the field of telegraphy. He was born in 1845; and served in a New Jersey regiment in the Civil War. Among his inventions was that of the three systems of duplex telegraphy purchased by the Western Union and the Southern Telegraph companies.

MOUNT HOLYOKE COLLEGE. An institution of the higher learning for women at South Hadley, Mass., founded in 1837. There were 787 students enrolled in the fall session of 1920. The faculty numbered 95, including 12 new members. The productive funds amounted to \$1,701,409.69 and the income was \$72,786.44. There were 73,638 volumes and pamphlets in the library. An additional endowment fund of \$3,000,000 was being collected. President, Mary Emma Woolley. L.H.D., LL.D.

MOVING PICTURES. To the average observer of moving picture theatres, there was little change to note as regards the popularity of this form of amusement as compared with the previous year. The marked decline in business and industrial activity that began to be noticeable during the autumn of the year, however, showed plainly that the moving picture industry was affected by the same general causes that were in evidence in all lines of business. There was an enormous amount of new film produced during 1920. Activity in those centres where the largest studios were located was very intense in the earlier months of the year and there were at that time probably more persons employed in the industry than at any other period in its history.

From the standpoint of technical detail little change was noticed. The weekly reviews depicting news topics were presented to the public in a surprisingly short time after the events themselves had occurred and covered every phase of activity such as are published in the daily press. While some slight progress was observed in the production of color films the result still left something to be desired from the standpoint of artistic effect. It was difficult always to secure such perfect registry of the three primary colors used as to avoid the annoying fringe of color forming the out-lines of the objects on the screen. It was reported that several inventors had almost perfected a mechanism for combining a talking machine with the projection lantern. The same difficulty, however, that had confronted previous attempts in this direction, namely, that of securing perfect synchronism between the film mechanism and the talking machine was still un-surmounted. Some critics have held that the result produced by such a combination, even if mechanically perfect, would not be a satisfying one because a person watching the development of a story on the screen, aided by well written captions supplies for himself an imaginary conversation and supplementary action which fills out the screen picture. If every action on the screen were accompanied in exact unison by words given out by a machine the art would be reduced to a more mechanical level; so it is generally believed the story would lose much of its appeal to the average spectator.

The slowing up of business referred to above showed its effect on the moving picture industry by a great reduction of operations at the producing centres. It was reported that at one very large studio where 30 different companies had been employed for some time before, at the end of the year there were only eight companies working. Attendance at theatres began to fall

off, except in the large cities were premières and special features were regularly presented. The news came from California that more than 50,000 actors were laid off during December owing to the slowing up of operations. In this connection, too, it was stated on good authority that the over production of films had been carried to such a point that there were stored away a quantity valued at \$25,000,000.

One fact was quite noticeable during the past year, and that was the increasing discrimination shown by the average audience in its judgment of the plays presented. Formerly it seemed as if the craze for this form of amusement by the public impelled the managers to present almost any kind of scenario; often mere trash, from a literary and dramatic point of view. During the past year, however, there was a notably different reception accorded by the public to the really strong plays of good dramatic quality. The opinions of the press critics were much more than formerly, indications of favorable or distasteful impressions of the public taste.

The question of censorship was again a live one during the year, but it could hardly be said that any particular progress was noted except in certain instances where self-constituted bodies undertook to pass on the suitability of pictures for public exhibition. Many state legislatures discussed bills offered for censorship and at Washington there was the usual unsuccessful endeavor to enact a national or federal measure for censoring moving pictures. In New York City an organization was perfected many of the directors of which were women, to encourage the production of films particularly adapted to the entertainment and instruction of children. It was said that this committee had made many valuable suggestions to the producers, which, it was hoped, would soon bear fruit in a number of bright, clean, entertaining photoplays. It would be difficult and hardly fair to pick out from the really successful dramas those that were considered to achieve the greatest popularity. Judged by the length of run in New York City, however, four plays stood out as worthy of being considered "big successes." Those were: "Humoresque," "Over the Hill," "Way Down East," and "Passion." It was reliably reported that the American rights to "Passion," a German production, were purchased for the sum of \$40,000. The *New York Times* announced that at the close of the year, the American producers valued these rights at \$500,000. "Passion" was presented at the Capitol Theatre, New York City, and during the first week of its run drew 106,000 spectators. During this same week the gross receipts of the theatre were estimated to have been at the rate of \$10,000 a day. Thus in spite of the business depression referred to before, it was quite evident that the close of the year was witnessing a satisfying test of the strength and drawing power of photo-plays in general, and certain ones in particular.

MOZAMBIQUE. See PORTUGUESE EAST AFRICA.

MUDGE, HENRY U. Railway president, died, January 30. He was born at Minden, Michigan, June 9, 1856, and went into railway work in Kansas, August, 1872. He rose through the various grades of the service and became general manager of the Atchison, Topeka and Santa Fe Railway. From 1909 to 1915 he was president and chief executive officer of the C. R. I.

and P. railway. In 1915 he was made president of the Denver and Rio Grande Railway and of the Rio Grande Southern Railway.

MUNICIPAL GOVERNMENT. Continued growth of the city-manager plan was the outstanding feature of the year. The plan went into effect in some 40 or more cities and was adopted in five to 10, effective in 1921. The total number of cities having managers, according to records kept by the City Manager's Association, is 204 in the United States and four in Canada. (See large table, pp. 456-459). Only 13 states do not appear in the list. Michigan leads with 27 cities and Texas and California follow with 17 each. The South Atlantic, Southwestern, and North Central groups of states are close together with 45, 44, and 43 cities in the list and the New England group is at the foot with only seven. Akron, Ohio, is the largest and McCracken, Kan., the smallest city having a full-time paid city manager, the respective populations being 208,435 and 371. In salaries, Norfolk, Va., leads with \$16,000 a year, paid to C. E. Ashburner, the earliest city manager, who began service at Staunton, Va., in 1908, and served also at Springfield, Ohio, a number of years before going to Portsmouth. Six other cities pay \$10,000 a year or more. Discrepancies in number between the list here given and some others published is due to the fact that other lists are confined to commission-manager cities. The number of plain commission-plan cities added to the list in 1920, as reported by both the National Municipal League and the American City Bureau, was but five: Fresno, Cal.; Aurora, Ill.; Henderson, Ky.; Onaway, Mich.; Brenham, Tex. The total number of plain commission and commission-manager cities in the United States is probably well towards if not over 600. A considerable number of the plain commission-plan cities listed in the tables published in earlier YEAR BOOKS are now in the commission-manager class.

The voters of *Boston, Mass.*, at the November election, disapproved a legislative amendment to their city charter changing the city council from nine members elected at large to 15 members chosen by districts.

At *Philadelphia* the small single bodied council of 21, that took office January 1 in place of the bicameral body with a total of 145 members, appears to have justified the change, although 14 of the 21 members were in the old councils and there has been much criticism of the new body. Commenting on the new council in the *National Municipal Review*, November, 1920, F. P. Gruenberg, director Philadelphia Bureau of Municipal Research says: "The new council is a great improvement. Not only is it simpler and more business-like in theory, but it actually functions better in practice . . . the attendance record is now virtually perfect . . . the important committees are almost always up to date in their work . . . [council] meetings are less perfunctory and there is real deliberation and often genuine debate, neither of which was so much as attempted in the old unwieldy body, (but) there is still a tendency to follow the 'bell-wether' on roll call."

A proposed county council-manager plan for *Baltimore County, Md.* (See *National Municipal Review*, Aug., 1920) was defeated at the November election. It provided for a council of 15 members and a manager chosen by the council, the latter with less power to appoint and remove

executive officers than is usual under the city manager's plan.

An attempt at *Ashtabula, Ohio*, to abolish both the city-manager plan and the election of the city commissioners by proportional representation was defeated at the general elections in November.

Chicago voted at the November elections to increase the number of city wards from 35 to 50 but to reduce ward representation on the city council from two to one, thus cutting the council membership from 70 to 50.

Home rule charter making powers for *Kansas City, Mo.*, were secured by an amendment to the constitution of Missouri adopted in November. At *Minneapolis, Minn.*, acting under existing authority, the voters adopted a codified city charter including all legislative amendments to the old charter to date, but no changes except the very important new provision that will enable the city to alter its charter at will hereafter, without going to the legislature.

Sacramento, Cal., voted on November 30 to change from the commission to the commission-manager plan and to elect the nine councilmen by proportional representation. The vote was 7962 to 1587, but of 30,469 registered voters only 9549 expressed their choice. The change in plan is subject to legislative approval, which in California follows as a matter of course. The new plan will go into full effect on June 30, 1921. The city manager will be appointed by the commission and will in turn appoint all other city executives except the city attorney, treasurer, clerk, and the police judge. The city engineer will exercise many of the functions of previous commissioners of streets and of public works. The boards of Parks and Playgrounds will be succeeded by superintendents of Parks and of Playgrounds. The Board of Education will be appointed by the City Council and will have as its executive officer a superintendent of schools.

Montreal, Canada, continued during the year to be governed in fact by the Administrative Commission, created by the Provincial Government, though the old mayor and council were still nominally in office. Meanwhile a charter commission created by the provincial government has been framing a new charter. The commission has approved the principles of complete municipal home rule for Montreal, with a city council of nine members, elected for four years by proportional representation from the city as a single election district; a mayor having few or no functions except those of city dignitary; and a general manager. The manager would be appointed by the city council, "solely on the basis of his executive and administrative capacities," and would appoint all heads of departments except the city clerk, attorney, and auditor, but the council could reject the appointments by a majority of all its members. Proportional representation at Montreal would be watched with interest on account of the conflicting religious and social conditions existing there, some three-fourths of the population being French Catholics and the remainder Irish Catholics, English Protestants, and a large number of Jews. (See also CITY PLANNING).

PROPORTIONAL REPRESENTATION, or the choice of members of city councils so as to give representation by parties or groups instead of by geographical districts, held its own during the year in the three American cities that had previ-

ously adopted it,—Boulder, Colo.; Ashtabula, Ohio; and Kalamazoo, Mich.—and there were one or two additions to the list. In Canada, the system is in use at Winnipeg, Man.; Calgary, Alt.; Vancouver, and Victoria, B. C., but it is reported that New Westminster, B. C., has abandoned it.

Much work on standardizing municipal salaries was done by Engineering Council, New York City, and by the American Association of Engineers, Chicago. The latter organization has created a committee to study various broad questions of civic administration.

See also CITY PLANNING, GARBAGE, HOUSING and discussion under MUNICIPAL OWNERSHIP, ROADS AND PAVEMENTS, SEWERAGE, WATER-WORKS.

STATE AND GROUP DISTRIBUTION OF CITY MANAGERS

(See large table for list of cities)

Maine	1	South Carolina	8
New Hampshire	1	Iowa	12
Vermont	1	Minnesota	3
Massachusetts	4	Kansas	5
Rhode Island	1	Nebraska	1
Connecticut	1	South Dakota	1
New England	7	North Dakota .....	..
New York	6	Wyoming	8
New Jersey .....	..	Montana .....	..
Pennsylvania	5	Northwestern	25
Delaware .....	..	Missouri	1
Maryland	1	Arkansas	3
District of Columbia ..	..	Texas	19
Middle Atlantic	12	Oklahoma	14
Virginia	18	Colorado	4
West Virginia	2	New Mexico	8
North Carolina	9	Southwestern	44

STATE AND GROUP DISTRIBUTION OF CITY MANAGERS

(See large table for list of cities)

Washington .....	..	Illinois	4
Georgia	5	Wisconsin .....	..
Florida	8	North Central	43
South Atlantic	45	Oregon	1
Alabama .....	..	California	19
Mississippi .....	..	Arizona	1
Louisiana	1	Nevada .....	..
Tennessee	8	Utah	1
Kentucky	1	Idaho .....	..
South Central	5	Pacific	22
Ohio	12	United States	204
Indiana .....	..	Canada	4
Michigan	27		

CITY MANAGER MUNICIPALITIES. Corrected to Dec. 31, 1920. Compiled by H. G. Otis, Secretary City Managers' Association. The 1920 census figures have been used when available. The column headed "Plan C" indicates that the position of manager has been created by adoption of a charter, a charter amendment, or optional state law by popular vote; "C" implies that such charter has been seriously modified; "O" indicates that the position of manager has been created by local ordinance only. The column headed "No. of Managers," indicates the number of managers which a city has successively employed. The column headed "Cities Served," following the names of the managers, indicates the number of cities each man has served as manager.

<i>City</i>	<i>Popu- lation</i>	<i>Plan</i>	<i>In effect</i>	<i>No. of mgrs.</i>	<i>Name</i>	<i>Manager Cities served</i>	<i>Appointed</i>	<i>Salary</i>
Arizona (1)—								
Phoenix	29,053	O	April, '14	3	V. A. Thompson	1	Jan., '18	\$5,000
Arkansas (3)—								
Bentonville	2,313	O	Sept., '15	2	J. C. Grimes	1	May, '20	1,800
Hot Springs	14,000	O	April, '17	2	Geo. R. Felding	1	Sept., '18	2,100
Monticello	8,500	O	Jan., '18	2	A. M. Bell	1	Jan., '20	1,800
California (19)—								
Alameda	28,806	O	May, '17	1	Chas. E. Hewes	2	May, '17	5,000
Alhambra	10,000	C	July, '15	3	G. M. Lorraine	1	Sept., '19	3,800
Anaheim	5,526	O	Nov., '19	1	O. E. Steward	1	Nov., '19	3,000
Avalon	670	O	Sept., '19	1	A. B. Waddingham	1	Sept., '19	4,800
Bakersfield	18,638	O	April, '15	2	F. S. Benson	1	May, '19	4,000
Coronado	2,500	O	Jan., '20	1	G. F. Hyatt	1	Jan., '20	2,100
Fillmore	1,597	O	Oct., '18	1	C. Arrasmith	1	Oct., '18	2,400
Martinez	2,705	O	'20	..				
Glendale	11,500	O	May, '14	1	T. W. Watson	1	May, '14	2,400
Pasadena	45,334	O	May, '21	..				
Paso Robles	2,000	O	April, '18	2	William Ryan	1	April, '19	2,000
Pittsburg	7,000	O	Sept., '19	2	R. M. Dorton	1	Nov., '19	3,000
Redding	5,000	O	Oct., '19	1	E. A. Rolison	1	Oct., '18	2,400
Richmond	16,843	O	July, '20	1	J. A. McVittie	1	July, '20	4,200
Sacramento	75,000	O	July, '21	..				
San Diego	74,683	O	May, '15	2	Wilbur H. Judy	1	May, '19	4,000
San Jose	39,604	C	July, '18	3	C. B. Goodwin	1	Oct., '20	3,600
Santa Barbara	19,441	C	Jan., '18	3	F. L. Johnston	1	March, '20	4,000
So. Pasadena	7,648	O	March, '20	1	R. V. Orbison	1	March, '20	3,300
Colorado (4)—								
Boulder	10,989	O	Jan., '18	3	Scott Mitchell	1	Sept., '20	4,000
Colo. Springs	29,572	C	April, '21	..				
Durango	5,300	C	March, '15	2	W. H. Wigglesworth	1	April, '19	1,800
Montrose	3,581	O	Feb., '14	5	J. E. McDaniel	1	Oct., '20	....
Connecticut (1)—								
W. Hartford	8,854	O	Nov., '20	1	B. I. Miller	1	July, '19	4,000
Florida (8)—								
Largo	500	O	June, '13	3	W. H. Turner	1	March, '18	1,200
New Smyrna	8,000	C	Jan., '21	..				
Ocala	5,610	C	Feb., '18	3	R. M. Martin	1	Oct., '18	2,400
St. Augustine	6,192	C	July, '15	2	Eugene Masters	1	April, '18	3,600
Sanford	5,588	C	Jan., '20	2	C. J. Ryan	1	June, '20	3,900
Tallahassee	5,637	C	Feb., '20	1	J. W. Greer	2	Feb., '20	5,000
Tampa	51,252	C	Jan., '21	..				
W. Palm Beach	8,659	C	Dec., '19	2	Karl Riddle	1	Sept., '20	4,200
Georgia (5)—								
Brunswick	14,413	C	Jan., '21	..				
Cartersville	5,810	C	Aug., '17	4	Abram Cook	1	Jan., '18	3,600

City	Population	Plan	In effect	No. of mgrs.	Name	Manager		Salary
						Cities served	Appointed	
Decatur	6,150	C	Jan., '21	1	B. P. Bridges	1	Dec., '18	2,550
Griffin	8,240	C	Dec., '18	1	Sam. S. King	1	April, '19	3,000
Rome	13,252	C	April, '19	1				
Illinois (4)—								
Glencoe	3,295	O	Jan., '14	1	H. H. Sherer	1	Jan., '14	5,000
Kenilworth ...	1,200	O	Sept., '20	1	F. L. Stread	1	Sept., '20	2,100
Wilmette	7,814	O	Oct., '18	2	C. C. Scholtz	1	Dec., '18	2,100
Winnetka	6,694	O	Jan., '15	2	H. L. Woolhiser	1	May, '17	3,600
Iowa (12)—								
Anamosa	3,000	O	May, '19	1	W. E. Hathaway	1	May, '19	1,800
Clarinda	4,511	O	April, '12	2	Henry Traxler	1	May, '19	2,700
Dubuque	89,141	C	June, '20	1	O. E. Carr	4	June, '20	8,400
Etherville	4,200	O	May, '19	1	F. G. Connolly	1	May, '19	8,000
Iowa Falls	4,000	O	May, '14	2	J. O. Gregg	1	March, '17	1,800
Manchester	3,160	O	May, '16	2	Thomas Wilson	1	May, '17	1,440
Maquoketa	4,000	O	June, '20	1	Guy O. Morse	1	June, '20	2,400
Mt. Pleasant ..	4,170	O	April, '16	1	T. W. McMillan	1	April, '16	1,800
Shenandoah ...	5,750	O	Nov., '20	1				
Villisca	2,170	O	May, '19	1	W. J. Oviatt	1	May, '19	1,200
Webster City ...	6,000	C	Oct., '16	2	G. J. Long	1	April, '17	2,400
West Liberty ...	2,000	O	April, '20	1	C. J. Mackay	1	April, '20	2,000
Kansas (5)—								
El Dorado	10,995	C	July, '17	1	Bert C. Wells	1	July, '17	3,600
Hays	2,839	C	May, '19	2	A. W. Seng	1	May, '20	3,000
McCracken	871	C	May, '19	1	L. L. Ryan	1	May, '19	1,800
Wichita	72,128	C	April, '17	8	L. W. Clapp	1	Oct., '19	10,000
Winfield	7,938	C	April, '21	1				
Kentucky (1)—								
Cynthiana	3,857	O	Dec., '15	2	J. J. Curle	1	Dec., '18	1,200
Louisiana (1)—								
Crowley	6,845	O	Sept., '20	1	J. O. Herpin	1	Sept., '20	3,600
Maine (1)—								
Auburn	16,985	C	Jan., '18	3	H. J. Cook	1	Sept., '20	4,000
Maryland (1)—								
Crisfield	4,000	O	Nov., '20	1			Nov., '20	....
Massachusetts (4)—								
Mansfield	6,255	C	Feb., '21	1				
Middleboro	8,500	C	Jan., '21	1	Wm. P. Hammersley	1	March, '18	4,000
Norwood	12,627	C	Jan., '15	2	Henry F. Beal	1	Jan., '20	5,000
Waltham	30,891	C	Jan., '18	2				
Michigan (27)—								
Albion	8,354	C	Jan., '18	4	E. J. Mallory	1	June, '20	2,000
Alma	7,542	C	May, '19	1	W. E. Reynolds	1	May, '19	4,500
Alpena	11,101	C	April, '16	3	W. E. Baumgardner	2	June, '20	4,000
Bay City	50,000	C	April, '21	1				
Big Rapids	5,100	C	April, '14	4	Dan. H. Vincent	1	May, '17	1,200
Birmingham ...	8,694	C	April, '18	2	Maurice Lowman	1	March, '19	3,600
Cadillac	9,734	C	March, '14	3	George Johnston	1	Jan., '18	2,200
Crystal Falls ...	3,394	C	April, '18	1	J. H. Sanders	1	April, '18	3,000
Eaton Rapids ...	3,000	O	Oct., '18	4	P. T. Mitchell	1	March, '20	2,500
Grand Haven ...	7,224	C	April, '15	3	Paul R. Taylor	1	July, '18	3,500
Grand Rapids ...	137,634	C	March, '17	2	Fred. H. Locke	1	May, '18	6,000
Gr'ee Pte. Shores	1,200	C	June, '16	2	H. N. Kennedy	1	April, '18	4,200
Jackson	48,374	C	Jan., '15	3	A. W. D. Hall	1	May, '17	4,000
Kalamazoo	48,487	C	June, '18	1	Harry H. Freeman	1	June, '18	7,500
Lapeer	4,500	C	May, '19	2	Charles Hubbard	1	April, '20	2,000
Manistee	6,690	C	May, '14	1				
Muskegon	36,570	C	Jan., '20	1	I. R. Ellison	3	Jan., '20	4,250
Otsego	4,000	C	May, '18	2				
Petoskey	5,064	C	April, '16	4	J. Frank Quinn	1	Jan., '20	5,000
Plymouth	2,500	C	Dec., '17	2	Sidney H. Strong	1	June, '20	3,500
Pontiac	34,273	C	Nov., '20	1				
Portland	2,747	C	Jan., '19	1	F. L. Jenkins	1	Jan., '19	1,800
Royal Oak	6,000	C	May, '18	8	P. H. Beauvais	2	Jan., '21	6,000
St. Johns	4,035	C	Aug., '18	2	T. H. Townsend	1	July, '19	3,000
Sault S. Marie ...	12,096	C	Dec., '17	3	Henry Sherman	1	July, '20	3,400
Three Rivers ...	5,209	C	April, '18	1	O. O. Johnson	1	April, '18	1,800
Vicksburg	2,000	O	Oct., '20	1	Thos. F. Cloney	1	Oct., '20	....
Minnesota (3)—								
Anoka	4,287	C	April, '14	1	Henry Lee	1	April, '14	1,500
Morris	8,500	C	Jan., '14	2	Frank J. Haight	1	Oct., '18	1,800
Pipestone	3,500	O	May, '17	2	V. H. Sprague	1	Sept., '20	3,000
Missouri (1)—								
Maryville	6,765	O	April, '19	1	W. O. Garrett	1	April, '19	2,250
Montana (8)—								
Columbus	1,000	O	Nov., '18	3	Harry P. Schug	1	Jan., '20	1,800
Glasgow	3,500	O	July, '16	2	Harvey Booth	1	March, '18	2,100
Scobey	1,500	O	Jan., '21	1	Roy N. Stewart	1	Jan., '20	2,100
Nebraska (1)—								
Alliance	7,000	O	Aug., '19	1				
New Mexico (8)—								
Albuquerque ...	15,157	C	Jan., '18	3	James N. Gladding	1	Feb., '20	5,000
Clovis	7,000	O	June, '19	1	Oscar Dobbs	1	June, '19	3,600
Roswell	7,062	O	May, '14	3	Clyde Fulton	1	March, '20	2,850
New York (6)—								
Auburn	36,142	C	Jan., '20	1	J. P. Jaekel	1	Jan., '20	4,000
Newburgh	30,272	C	Jan., '16	4	W. J. McKay	1		
Niagara Falls ...	50,760	C	Jan., '16	2	Edwin J. Fort	1	Sept., '18	6,000
Sherrill	1,500	C	June, '16	4	S. E. Northway	1	Aug., '20	* 200
Watertown	31,263	C	Jan., '20	1	O. A. Bingham	3	Feb., '20	7,500
Watervliet	16,073	O	Jan., '20	2	H. E. Gabriels	1	June, '20	3,600
North Carolina (9)—								
Elizabeth City ...	8,925	C	April, '15	4	J. C. Commander	1	Jan., '20	2,400
Gastonia	12,871	C	Aug., '19	1	W. J. Alexander	1	Aug., '19	3,600
Goldshoro	11,296	C	July, '17	3	W. M. Rich	2	June, '20	4,500

City	Popu- lation	Plan	In effect	No. of mgrs.	Name	Manager		Salary
						Cities served	Appointed	
Hendersonville.	4,160	O	July, '20	1	G. W. Brooks	1	July, '20	.....
Hickory	5,076	C	May, '18	4	R. G. Henry	1	Feb., '20	3,000
High Point	14,302	C	May, '15	3	R. L. Pickett	1	March, '19	3,000
Morehead City ..	3,500	O	June, '16	3	John S. Bennett	1	June, '19	2,100
Morganton	2,867	C	May, '18	8	W. R. Patton	1	May, '18	2,400
Thomasville	5,676	C	May, '15	6				
Ohio (12)—								
Akron	208,435	C	Jan., '20	1	W. J. Laub	1	Jan., '20	10,000
Ashtabula	32,082	C	Jan., '16	2	M. H. Turner	1	Jan., '18	3,500
Dayton	152,559	C	Jan., '14	3	Wm. H. Barber	1	Jan., '18	6,000
E. Cleveland ..	27,292	C	Jan., '18	1	C. M. Osborn	1	Jan., '21	12,000
Gallipolis	6,070	C	Jan., '18	1	Edw. E. Myers	1	Jan., '18	1,680
Lima	39,000	C	Jan., '23	..				
Painesville	6,886	C	Jan., '20	1	T. B. Wyman	1	Jan., '20	4,000
Sandusky	22,897	C	Jan., '16	3	G. M. Zimmerman	1	April, '18	5,400
S. Charleston ..	1,500	C	Jan., '18	1	P. H. Cheney	1	Jan., '18	1,600
Springfield	60,840	C	Jan., '14	3	E. E. Parsons	1	June, '20	6,000
Westerville	3,500	C	Jan., '18	2	R. W. Orebaugh	1	Sept., '17	2,100
Xenia	9,110	C	Jan., '18	1	Kenyon Riddle	2	Jan., '18	3,600
Oklahoma (14)—								
Cherokee	3,100	C	Oct., '20	1	John D. Bomford	1	Oct., '20	3,000
Coalgate	4,000	C	July, '14	3	Leslie E. Bay	1	Aug., '19	1,620
Collinsville	3,500	C	Feb., '14	3	H. P. Hampton	1	May, '18	2,400
Duncan	3,463	O	Nov., '20	1	R. W. Cline	1	Nov., '20	3,000
Erick .....	..	C	June, '20	1	J. A. Richardson	1	June, '20	.....
Madill	1,760	C	Nov., '17	3	A. P. Marsh	1	May, '18	1,800
Manum	3,405	C	Nov., '14	4	R. B. Snell	1	Jan., '19	1,800
McAlester	12,095	C	Nov., '19	1	E. M. Fry	1	Nov., '19	5,000
Muskogee	30,277	C	Nov., '20	1	R. P. Harrison	1	April, '20	6,000
Norman	5,004	C	April, '20	1	W. R. Gater	1	Sept., '19	3,000
Nowata	8,000	C	May, '20	1	Jas. C. Manning	1	May, '20	4,200
Sallisaw	3,000	C	Nov., '19	1	F. E. Johnston	2	Nov., '19	3,000
Walters	3,600	O	Sept., '19	1	W. B. Anthony	1	Nov., '19	3,000
Weatherford ..	3,000	C	Aug., '17	3	G. A. Critchfield	1	June, '19	1,700
Oregon (1)—								
La Grande	6,913	C	Oct., '13	5	Geo. Garrett	1	June, '20	3,000
Pennsylvania (5)—								
Altoona	60,331	O	Jan., '18	1	H. Gordon Hinkle	1	Jan., '18	7,500
Ambridge	12,780	O	Nov., '18	2	W. M. Cotton	3	Feb., '20	4,500
Edgeworth	2,500	O	Jan., '14	3	Robert Lloyd	1	March, '20	3,000
Mifflinburg	2,000	O	Jan., '19	1	W. I. Kochersperger	1	Jan., '19	2,500
Towanda	5,510	O	April, '18	1	W. T. Howie	1	April, '18	1,500
South Carolina (3)—								
Beaufort	3,700	C	May, '15	5	John Collier	2	Sept., '20	2,400
Rock Hill	8,809	2	Feb., '15	2	E. R. Treverton	1	Dec., '19	3,600
Sumter	9,508	C	Jan., '13	6				
South Dakota (1)—								
Clark	1,335	O	May, '12	1	J. L. Smith	1	Jan., '12	1,200
Tennessee (3)—								
Alcoa	3,358	C	July, '19	1	V. J. Hultquist	1	July, '19	2,000
Kingsport	5,692	C	March, '17	3	L. Herbert Kidd	1	April, '20	4,200
Murfreesboro ..	5,935	O	..	1	R. E. Lowe	1	..	..
Texas (19)—								
Amarillo	15,494	C	Dec., '13	6	J. G. Colby	1	June, '20	2,900
Beaumont	40,000	C	April, '20	1	Geo. J. Roark	1	April, '20	10,000
Brownsville	11,791	C	Jan., '15	8	George Grupe	1	Feb., '29	5,000
Brownwood	8,225	C	April, '16	3				
Bryan	6,295	C	May, '17	4	E. E. McAdams	1	June, '20	3,300
Denton	7,626	C	April, '14	3	H. V. Hennen	1	May, '19	2,000
Eastland	9,368	C	Jan., '19	1	Walter Lander	2	Jan., '19	6,000
Electra	7,500	O	May, '19	2	E. D. Kelley	1	June, '20	4,200
Lubbock	3,959	C	..	1	Martia S. Ruby	1	..	3,600
Lufkin	4,878	C	April, '18	1				
Ranger	16,295	C	May, '19	1				
San Angelo	9,392	C	June, '16	2	R. H. Henderson	1	Nov., '20	.....
Sherman	15,031	C	April, '15	2	O. J. S. Ellingson	1	April, '16	3,600
Stamford	3,704	C	March, '18	3	Homer D. Wade	..	Dec., '20	4,800
Taylor	5,965	C	April, '14	3	A. V. Hyde	1	April, '18	2,000
Teague	3,760	O	Jan., '15	3	C. E. Johnson	1	..	..
Terrell	8,349	C	Aug., '19	1	J. P. Kittrell	1	Aug., '19	2,400
Tyler	12,085	C	April, '15	2	Henry J. Graesser	1	Aug., '18	3,600
Yoakum	7,500	C	April, '15	2	J. V. Lucas	1	Nov., '19	.....
Utah (1)—								
Brigham City ..	5,282	O	Feb., '18	2	C. O. Roskelley	1	May, '20	2,400
Vermont (1)—								
Springfield	5,283	O	April, '20	1	John B. Wright	1	April, '20	3,600
Virginia (18)—								
Bedford	4,500	O	April, '20	1	C. T. Venable	1	May, '20	2,800
Blackstone	2,000	C	June, '14	1	R. B. Stone	1	June, '14	1,500
Bristol	6,720	O	Sept., '19	1	R. W. Riggsby	1	Sept., '19	3,800
Charlottesville ..	10,688	C	Aug., '13	4	W. Washabaugh	1	Sept., '20	3,600
Farmville	4,000	O	Sept., '15	2	Leslie Fogus	1	Sept., '17	1,400
Fredericksburg ..	5,882	O	Sept., '12	2	L. J. Houston, Jr.	1	Oct., '18	3,600
Hampton	7,000	C	Sept., '20	1	Geo. L. Rinkliff	1	Sept., '20	3,000
Lynchburg	29,956	C	Sept., '20	1	E. A. Beck	4	Sept., '20	7,500
Newport News ..	35,596	C	Oct., '20	1	L. G. Thom	1	Oct., '20	6,000
Norfolk	115,777	C	Sept., '18	1	C. E. Ashburner	3	Sept., '18	16,000
Petersburg	31,002	C	Sept., '20	1	Louis Brownlow	1	Sept., '20	10,000
Portsmouth	54,387	C	Jan., '17	3	J. P. Jersey	1	Sept., '20	10,000
Radford	4,627	C	Sept., '20	1	Paul J. B. Murphy	1	Sept., '20	3,300
Roanoke	50,842	C	Sept., '18	1	W. P. Hunter	1	Sept., '18	4,800
Staunton	10,617	C	Sept., '20	2	S. D. Holsinger	1	Jan., '11 *	2,000

* Staunton created the position of general manager by ordinance in 1908, under the old mayor-and-council

City	Population	Plan	In effect	No. of mgrs.	Name	Manager Cities served	Appointed	Salary
Suffolk	9,123	C	Sept., '19	1	R. H. Brinkley	1	Oct., '19	3,000
Warrenton	3,000	O	March, '20	1	L. M. Clarkson	1	March, '20	1,800
Winchester ...	6,883	O	May, '18	2	Thos. J. Trier	1	Sept., '18	2,000
West Virginia (2)—								
Charleston	39,608	C—	May, '15	4	Bonner H. Hill	1	May, '19	4,500
Wheeling	54,322	O	July, '17	2	Chas. O. Ephlin	1	June, '19	8,000
Canada:								
N. B. (2)—								
Edmundston ..	4,000	O	Feb., '20	1	L. L. Theriault	1	Feb., '20	3,000
Woodstock ..	8,856	O	June, '19	1	R. F. Armstrong	1	June, '19	3,000
P. Q. (1)—								
Grand Mere ..	9,000	O	March, '20	1	Henry Ortiz	1	March, '20	5,000
Westmount ..	14,579	C	April, '18	11	Geo. V. Thompson	1	April, '18	....

MUNICIPAL LEAGUE, NATIONAL. See NATIONAL MUNICIPAL LEAGUE.

MUNICIPAL OWNERSHIP. As has been the case for years past, there was during the year a slow but steady advance in municipal ownership. In the *water-works* field *San Francisco* continued construction of the Hetch Hetchy dam and an aqueduct that will provide a large new water supply and also a large amount of hydro-electric power. The California State Railroad Commission placed a valuation of \$37,000,000 on the works of the Spring Valley Water Company that now supply San Francisco with water, and it was expected that early in 1921 there would be a popular vote on buying the works at the price named. At San Francisco also the voters at the November election gave a large majority in favor of a charter amendment authorizing negotiations for the purchase of the United Railroad and the addition of the property to the existing municipal street railways. The amendment provides that if the purchase is made the price must be paid from earnings and it also provides that the purchase agreement must be approved by popular vote. *Detroit* early in the year voted a bond issue of \$15,000,000 for the construction of a municipal electric railway system to consist of 101 miles of track, power houses and equipment. Construction was started, but litigation to prevent carrying out the scheme was threatened by the local street railway company. The voters of *Madison, Wis.*, early in the year voted against buying the local street railway system. At *Cleveland, Ohio*, a \$15,000,000 bond issue for a proposed street car subway system in the centre of the city was defeated due at least in part to the general feeling that it would not provide real rapid transit. *New York City* began the operation of some of the electric railways on Staten Island, Borough of Richmond, owing to the fact that the street railway companies had shut down the lines because of alleged inability to continue operation on a five-cent fare. The *gas works* of *Omaha, Neb.*, came in the possession of the Omaha Metropolitan Water District on July 1. Late in the year it was announced that *Redlands, Cal.*, had taken over the gas works from a private company, thus becoming the first city in the State to operate gas works. Bonds to the amount of \$150,000 were authorized in the autumn by the voters of *Jamestown, N. Y.*, for a central and municipal milk supply system, to consist of a milk bottling, pasteurizing, and distributing plant under the direction of four commissioners to be appointed by the mayor. This project has been promoted for several years past by Samuel A. Carlson, mayor of Jamestown. The proposal was previously defeated by a large majority. At the close of the year Mr. Carlson reported that

steps had been taken to establish a plan as soon as the bonds were sold. The plan is to pasteurize all but Grade A milk—i.e., all but milk from tuberculin-tested herds.

MUNRO, ROBERT. British anthropologist, died, July 18. He was born at Rosshire, July 21, 1835, and educated at the University of Edinburgh. He then practiced medicine until 1886, when he devoted his time to archaeology and anthropology; was president of the anthropological section of the British Association, 1893; and was lecturer on archaeology and anthropology at the universities of Glasgow and Edinburgh. He was a member of the leading scientific bodies of the world in this field. His publications were very numerous, including the following: *Ancient Scottish Lake-Dwellings* (1882); *The Lake-Dwellings of Europe* (1890, French ed. 1908); *Rambles and Studies in Bosnia, Herzegovina and Dalmatia* (1895, 2nd ed. 1900); *Prehistoric Problems* (1897); *Pre-civilization* (1899); *Man as Artist and Sportsman in the Palæolithic Period* (1904); *Archæology and False Antiquities* (1905); *Munro Lectures* (Palæolithic Man, and Terremare, 1912); *Pre-historic Britain* (1914); *Darwinism and Human Civilization*, with special reference to the origin of German military culture (1917).

MURPHY, FRANKLIN. Former governor of New Jersey, died, February 24. He was born at Jersey City, N. J., Jan. 3, 1846; educated in the schools of Newark and served as a private in the New Jersey Volunteers during the Civil War. After the war he established in 1865 the Murphy Varnish Company, and became its president. He took an active part in politics after 1880 and was a member of the Newark Common Council and of the New Jersey Assembly and was chairman of the Republican State Committee after 1892. In 1902–05, he was governor of New Jersey. In the campaign of 1908 he received 77 votes for the vice-presidential nomination at the National Convention at Chicago. After 1900 he was a member of the Republican National Committee.

MURPHY, WILLIAM MARTIN. Irish railway manager and organizer, died, June 26. He was born, Dec. 29, 1844, and in 1885–92 carried out important railway, electric railway, and lighting enterprises in Great Britain as well as railway construction in the Gold Coast Colony. He was chairman of the Dublin United Tramways Company; founded in 1905 the *Irish Independent*; and was president of the Dublin Chamber of Commerce, 1912–13. In 1913 he was prominent in the opposition to the strikes of the syndicalists in Dublin.

MURRAY, ARTHUR MORDAUNT. British officer and military writer, died May 23. He was born, Jan. 20, 1852; educated at Woolwich and

entered the Royal Artillery in 1873. He served in India, Egypt, and South Africa. He was sent on a mission to Japan in 1906. In 1892 he received a medal for an essay on "Fire Discipline." He wrote, *Imperial Outposts* (1907), and the *Fortnightly History of the War* (1914-16).

MUSEUMS. See PAINTING AND SCULPTURE.

MUSIC. In the YEAR BOOK for 1918 mention was made of the origin of community singing as a direct result of the war. In the two years that have elapsed since then the movement thus inaugurated has spread throughout the length and breadth of the country. Many ex-soldiers, after return to civil life, communicated the enthusiasm aroused in them by the "camp-songs" to their fellow-workers, with the result that in an incredibly short time employees of the larger companies in many industrial centres banded together for the cultivation of singing. Even before the war the employees of the Knox factory in Philadelphia had won considerable local reputation for the excellence of their chorus, which at that time was a unique organization. To-day innumerable factories, department stores, banks, insurance companies, and other institutions have followed the example of the Knox people. The Bethlehem Steel Workers, besides having their own chorus, have succeeded in recruiting from among their own number a full symphony orchestra of almost 100 players, while other corporations can boast of orchestras on a smaller scale, or of brass-bands. The employees of the Federal Reserve Bank in New York gave a remarkable operatic performance, *The Bohemian Girl*, at the Lexington Opera House, without the assistance of a single outsider even in the principal rôles (June). In Washington the movement culminated in the establishment of a Community Opera, which began its career with a highly creditable production of *Aida* (December 14), the entire orchestra, chorus, and ballet, and most of the principals, being residents of the capital. A special post of Civic Organist was also created, to which Edith B. Athey, a music-teacher of the public schools, was appointed. Furthermore, Congress donated a site to the George Washington Memorial Association for the erection of a National Victory Memorial Building to cost \$10,000,000, containing, besides numerous smaller halls for various purposes, a large auditorium with a seating capacity of 7000, suitable for music-festivals on a large scale. Baltimore created a special Department of Municipal Music. In some of the larger cities a number of the local community choruses joined forces and inaugurated Community Festivals, with masses aggregating more than 1000 singers, attended by audiences numbered by tens of thousands. This general interest in music on the part of the masses gave a tremendous impetus to the "Globe Free Concerts" in New York and vicinity, which were begun five years ago, on a very modest scale, by the New York *Globe*, under the general management of Charles D. Isaacson. On April 20, 5000 persons heard the one-thousandth concert of the series at the Metropolitan Opera House. By the end of the year the number of concerts had reached 1124, at which 1700 artists had appeared before 2,150,000 listeners. At the suggestion of the City Chamberlain, whose plan was approved by the mayor, the City of New York took active steps toward the establishment of a fully equipped Municipal Conservatory. At the third annual meeting (New York,

November 18) the Musical Alliance of the United States launched a movement for the establishment of a Ministry of Fine Arts and a National Conservatory of Music. Of special interest was the celebration of "Music Week" in New York (February 1-7).

GENERAL NEWS. Orchestral, choral, and chamber-music organizations, churches, hotels, theatres, moving-picture houses, and individual artists, all combined to bring music in some form home to everybody. At the Grand Central Palace an exhibition of musical instruments was held, with lectures and recitals. In all the public schools special programmes were rendered. As a result of the interest aroused, many neighboring towns followed the example of the metropolis, the National Association of Music Merchants pledged the sum of \$250,000 toward the establishment of a National Conservatory of Music. The State of New York created a new position, Specialist in Music, in the State Educational Department at Albany. Russel Carter, superintendent of music in the public schools of Amsterdam, N. Y., was appointed as first incumbent. A few months later Hollis E. Dann, professor of music at Cornell University, was called to fill a similar position created by the State of Pennsylvania at Harrisburg. The difficulty of securing competent players of woodwind for the large orchestras induced Frederick Stock, conductor of the Chicago Symphony Orchestra, to offer two scholarships for three years for the study of the oboe under Alfred Barthel, first oboist of the orchestra. For the same reason Eric De Lamarter, assistant-conductor, established three scholarships for the study of the bassoon under Walter Guetter, first bassoonist. The Cleveland Museum of Art received \$250,000, by an anonymous donor, for the purpose of establishing a permanent department of music, the need of which was demonstrated by the courses given during the last two years by T. W. Surette and D. N. Tweedy. The old Academy of Music, in Philadelphia, was acquired by a syndicate, remodelled, and its seating capacity increased to accommodate over 3000 persons. It is to be used for the concerts of the Philadelphia Symphony Orchestra and the performances given by the Metropolitan Opera Company of New York. The one hundred and fiftieth anniversary of the birth of Beethoven was universally observed by organizations and individual artists with the performance of special programmes devoted to the works of the master. At the end of the first year of its existence the Beethoven Association of New York had netted \$6000 from its concerts. It was decided to devote this sum to the publication of the English translation (made by H. E. Krehbiel) of Thayer's standard biography of Beethoven. For the second time in the history of the French Academy the Grand Prix de Rome was awarded to a woman, Marguerite Canal, for her cantata *Don Juan*. Early in the year Lilli Lehmann donated to the Staatsbibliothek in Berlin all letters written to her by Richard Wagner; a few months later she added all letters from other celebrities received during her entire artistic career.

ARTISTS. INSTRUMENTALISTS. Before the war Berlin was the Mecca of all young aspirants for fame. No American artist thought of appearing in his native country before having won the approval of the Berlin critics. The unprecedented number of débuts in New York, both by

native and foreign artists, more than doubled the record of the preceding year. Among the new pianists the Peruvian Carlos Valderrama (début New York, January 21), attracted attention by his recitals of genuine Inca music, collected and arranged by himself. His programmes always consisted of two parts, the first devoted to primitive melodies conceived in the pentatonic scale, the second presenting compositions of the colonial period, when Italian influences made themselves felt. A young Hungarian, Ervin Nyredghazi, made a profound impression at his début (New York, October 18), which was deepened by his subsequent appearances. His technic and tonal gradations were nothing less than superlative. Katharine Bacon, a young Englishwoman (début, New York, November 19), gave every promise of taking a place in the front rank of pianists. The variety of her programme disclosed an extensive repertoire truly surprising in one so young. Alfredo Oswald, a Brazilian composer, proved himself a pianist of fine insight and highly poetic conception (New York, November 27). Among the host of newcomers who proved to be serious artists, but whose performances did not disclose any outstanding merits, were: Alexander Sklarevsky (March 18), Alfred Mirovitch (October 20), Boris Paranov (October 27), Jacques Colas (November 10), Pepito Echániz (November 11), Jacques Pintel (November 3), Guido Agosti (December 27). The enthusiasm which Sergei Rachmaninov aroused on his first American tour continued unabated. At the concert of the New York Symphony Society of February 17, under Walter Damrosch, Alfred Cortot played three concertos by Beethoven (C, op. 15; Bb, op. 19; C m., op. 37). The list of eminent pianists heard during the year includes: Joseph Hofmann, Harold Bauer, Leopold Godowsky, John Powell, Mischa Levitzki, Ossip Gabrilovitch, Rudolf Ganz, Josef Lévinne, Robert Schmitz, Ernest Hutcheson, Oliver Denton, Maurice Dumesnil, Benno Moisevitch, Olga Samarov, Fannie Zeisler, Katharine Goodson, Guiomar Novaes, Rosita Renard, Madeleine Brard. Worthy of special mention is the recital for two pianos given in New York on December 9, by the sisters Rose and Otilie Sutro, when they introduced to this country a Norse Suite, written for them by the late Max Bruch, one of the composer's last works, full of genuine inspiration and rugged energy. Very successful recitals for two pianos were given also by two Boston artists, Guy Maier and Lee Pattison. Regarding the visit of the eminent English modernist Cyril Scott, interest was centered upon the composer rather than the pianist. He made his début on November 9, playing his own concerto for piano and orchestra at a concert given in New York by the Philadelphia Symphony Orchestra. On November 20, he offered a programme of his compositions for piano and songs, the latter interpreted by Eva Gauthier. As a pianist he is amply equipped to convey his intentions. The large and demonstrative audiences that greeted him were evidently in sympathy with his modernistic tendencies. The first violinistic début of importance was that of Helen Teschner-Tas (New York, January 22), who showed herself a profoundly emotional player, possessed of a wonderfully large and sympathetic tone and almost flawless technic. Abraham Haitovitch (New York, March 6), a blind Russian violinist, was an artist of sterling achievement to be

judged only by the highest standards, without any apology for his affliction. The much heralded Russian prodigy Sascha Culbertson (New York, March 8), who during the war created a sensation in England, failed to meet expectations. His tone was rather small, and, while his playing of such music as *Vieuxtemps* was really brilliant, his conception of Bach and Beethoven was quite immature. Mischa Violin (New York, October 3), revealed himself as a very fine artist, a master of the intimate style. The art of the Hungarian Duci Kerekjarto (New York, November 2), combined a large, vibrant tone, a stupendous technic and a fiery temperament verging on the volcanic. The Spanish artist Juan Manén, who for some years past has been regarded in Europe as the legitimate successor of Sarasate, proved at his début (New York, November 16), that this high estimate is justified. Unusual enthusiasm was evoked by the young Bohemian Vasa Prihoda (Elmira, N. Y., November 18; New York City, November 22), who revealed qualities that place him by the side of Elman or Zimbalist. Daisy Kennedy, the wife of Benno Moisevitch, made a very favorable impression at her début (New York, November 29), through her incisive vigor, fine penetration and breadth of style. Other newcomers, whose art does not call for special comment, were: Gabriel Engel (January 24), Rudolf Bocheo (October 2), Mishel Pistro (October 3), André Polah (October 23), Marie Morrell (October 14), Josef Fuchs (November 12), Josef Stopak (October 16), Piastro Borissov (November 1), Marta de la Torre (November 29). After an absence of seven years Jan Kubelik had just begun another triumphant tour of the States, when illness interrupted his plans. Among the famous violinists heard during the year were: Ysaye, Kreisler, Thibaud, Heifetz, Elman, Spalding, Eddy Brown, Isolde Menges. Oscar Nicastro, from Uruguay, was the only violoncellist of importance (New York, March 8). He has a beautiful tone and very facile technic. Lovers of the cello had rather a lean year, even if such masters were heard as: Pablo Casals, Michael Penha, Bruno Steindel, Vladimir Dubinsky, Maurice Dambois, Max Gegna, and May Mukle. Concerts of an unusual character were the recitals of two masters of the double-bass, Antonio Torello (New York, October 28), and Leon Ziporkin (New York, December 2).

VOCALISTS. Seldom have the vocal offerings of any season fallen to such a low level as those of the past year. Not only did the programmes show little variety, but the compositions themselves, as a rule, were of slight musical value. An interesting recital of melodies of various Indian tribes was given by Watahwaso, a princess of the Penobscot tribe, in New York (April 7). The re-appearance (April 22), after an absence of several years, of the famous Dutch contralto, Tillie Koenen, disappointed her numerous admirers. Her voice had lost neither its power nor charm, but when she sang a group of German *Lieder* in English translations, she was evidently hampered by the unaccustomed language. Tom Burke, an Irish tenor, who was the sensation of the London operatic season of 1919, created no unusual excitement (début Saranac Lake, N. Y., September 24). Among the well-known favorites who appeared in concert were: John MacCormack, Louis Graveure, George Hamlin, Reinald Werrenrath, José Mardones, Alessandro Bonci, Titta Ruffo, Giovanni Martinelli, Ernest-

tine Schumann-Heink, Olive Fremstad, Frieda Hempel, Margaret Matzenauer, Frances Alda, Emma Destinnova, Yvonne Gall, Yvette Guilbert, Amelita Galli-Curci, Cyrene Van Gordon, Luisa Tetrassini, Maggie Teyte, Nina Tarasova, Eva Gauthier, Rosa Ponselle.

ORCHESTRAS. Economic conditions were responsible for numerous changes in the personnel of the large symphony orchestras. The high cost of everything caused a general demand for increased salaries, which most organizations were not able to grant. The result was that a few amply subventioned orchestras, by offering more attractive contracts, secured some of the finest artists of the less fortunate societies. Because of these conditions the New Orleans Symphony Orchestra was disbanded in January. The famous Boston Symphony Orchestra, whose efficiency had already been seriously impaired through the vicissitudes of the preceding year (see YEAR BOOK, 1919), was completely demoralized and brought to the verge of dissolution. Inability on the part of the directors to accede to the demands of the players created general dissatisfaction, and a majority of the members joined the Musical Union. Disagreement between the conductor, Pierre Monteux, and concert-master, Frederick Fradkin, led to open rebellion. Thirty-two members, who sided with the latter, struck and were dismissed (March 10). With its personnel thus reduced to 67 players, an engagement for a tour of the South could be filled only by a complete change of the original programmes. The dismissed performers, together with other musicians from the Union, formed the American Federation Symphony Orchestra with Emil Mollenhauer as conductor. After two concerts, attended by small audiences, this attempt to displace the older orchestra was abandoned. In the autumn the Boston Symphony Orchestra, under Pierre Monteux, entered upon its fortieth season with its full complement of players (100), headed by a new concert-master, Richard Burgin, a young British violinist, who made a very successful début as soloist with the orchestra in Brahms' concerto (December 17.) The New Symphony Orchestra (Artur Bodanzky) of New York was completely reorganized, and its name changed to The National Symphony Orchestra. Of the 100 players only 38 were retained, the newcomers having been recruited from the ranks of the foremost American orchestras. The original number of 30 concerts was doubled, a series of Sunday night concerts was added, and visits to other cities were inaugurated. During July and August the orchestra gave a very successful series of open-air concerts at the Stadium of the College of the City of New York, under Walter Rothwell, as guest-conductor. Under its regular conductor, Walter Damrosch, the New York Symphony Orchestra made a tour of France, Italy, Belgium, and England (May and June). It was the first time that an American orchestra visited Europe, and its reception by the public and critics left nothing to be desired. While in Italy, Mr. Damrosch was made a Knight of the Order of the Crown. In the fall a series of historical concerts, showing the development of the symphony, was given. By the middle of December, Beethoven was reached, and at the same time the 150th anniversary of the master's birth was celebrated by the performance of a unique programme consisting of three symphonies (Nos. 1, 5, 7). At the invitation of Mr. Dam-

rosch, Albert Coates, conductor of the London Symphony Orchestra, directed the concert of December 30, which was devoted exclusively to works by British composers. On this occasion the young Englishman revealed himself as a symphonic conductor of the first rank. The publication of E. W. Bok's autobiography first revealed the fact that the eminent publisher was the unknown donor of the \$250,000 which maintained the Philadelphia Symphony Orchestra during the years of the war. Hans Kindler, for many years first cellist of this organization, resigned and was succeeded by Michael Penha. On February 16th Mr. Stokowski presented a programme as unusual as it was interesting, when Bauer, Gabrilovitch, and Samarov performed Bach's concerto in C for 3 pianos and orchestra, while the two first mentioned artists rendered also Mozart's concerto in Eb for two pianos and orchestra. The twentieth anniversary of the first concert (November 20) was observed by a repetition of the identical programme conducted by Fritz Scheel at the initial concert.—The Cleveland Symphony Orchestra (Nikolai Sokolov) increased its personnel from 75 to 90 performers and the number of concerts from 50 to 80.—At the opening concert of its career (April 25) the Nashville Symphony Orchestra of 60 players, under F. Arthur Henkel, made such a decided impression that prominent citizens subscribed a guarantee fund sufficient to allow the immediate engagement of 15 additional performers. Another accession to the ranks of orchestral societies is the Toledo Symphony Orchestra (50 performers, Lewis H. Clement conductor), which ventured upon its career on October 20th.—An event of the first magnitude was the appearance of Arturo Toscanini with his new orchestra of La Scala in Milan, every member of which was selected and drilled by himself. At the opening concert (New York, December 28th) enthusiasm ran riot, although the orchestra was not as well balanced or finely attuned as when he led the Wagner performances at the Metropolitan some years ago. But then he had an orchestra which he had drilled for years, whereas the new Scala orchestra was organized only a few months ago.

CHAMBER-MUSIC. A very deep impression was made by the superlative playing of the London String Quartet (J. Levey, 1st vl.; T. W. Petre, 2d vl.; H. W. Warner, vla.; C. W. Evans, vcl.), which made its American début at the Berkshire Festival, September 24th. Later in the year these artists gave in New York a Beethoven cycle, performing all the string-quartets in chronological order. When the Flonzaleys introduced to New York a new Concertino by Stravinsky (November 23d), the work was received with loud hisses. Even advanced modernists shook their heads. The important event in the field of chamber-music was the third annual Berkshire Festival, held at Pittsfield, Mass. (September 23d-25th). The \$1000 Coolidge Prize was won by Francesco Malipiero with a string-quartet in one movement, entitled *Rispetti e Strambotti*. It was performed by the Berkshire String Quartet, but made no impression. The critics unanimously repudiated it as too futuristic. Vastly more interesting was the American début of the London String-Quartet, on the second day, when they gave a masterly rendition of Beethoven's Quartet in E m., op. 59, No. 2. Frank Bridge's Quartet in E m. had a splendid opening movement; the rest was decidedly uninspired. The novelty of

the programme was H. W. Warner's *Phantasy* for string-quartet, based on a Berkshire folk-song, a delightful work in its unaffected freshness. Efreim Zimbalist and John Powell contributed a piano and violin recital, playing a sonata of Beethoven (op. 96) and Brahms (op. 108) and Powell's own sonata in A♭. A wonderful performance of Brahms' Variations on a Theme of Haydn, for two pianos, was given by Guy Maier and Lee Pattison. The Salzedo Harp Ensemble (seven harps) and the Trio de Lutèce collaborated in a programme of music specially arranged for harps. The festival closed with Enesco's fine string-octet in C, performed by the London and Berkshire Quartets. Genuine regret was caused by Mrs. Coolidge's official announcement of the dissolution of the Berkshire Quartet, which made its last appearance at this festival. No reason was given. But Mrs. Coolidge expressly stated that the festival itself would be continued.

FESTIVALS. A monster festival, such as New York had not witnessed since the days of Theodore Thomas and Leopold Damrosch, almost 40 years ago, was arranged and conducted by Walter Damrosch at the 71st Regiment Armory (April 6th-11th). The chorus consisted of the New York Oratorio Society, augmented by the People's Choral Union and several smaller singing-societies from Brooklyn and near-by Jersey towns. The orchestra was that of the New York Symphony Society. Six concerts were given: 1. Mendelssohn's *Elijah*; 2. Rachmaninov programme, with the assistance of the composer; 3. Kelley's *Pilgrim's Progress* (first time in New York); 4. Bach-Beethoven-Brahms programme, the Bach selections rendered by the famous Bach Choir of Bethlehem; 5. Berlioz' *Damnation de Faust*; 6. Miscellaneous programme. Although this festival came near the end of an overcrowded musical season, there was not a vacant seat in the huge building at any concert, and the receptive faculty of the audience seemed unusually keen. The grandiose effects obtainable only from immense masses evidently impressed the surfeited New Yorkers with the force of novelty.—In the nature of a festival was the unique celebration in New York of the centennial of the birth of Jenny Lind (October 6th). Not only was the programme of her initial concert in America (Sept. 11, 1850) repeated literally, but all participants, including the members of the orchestra, appeared in the dress of the period. Frieda Hempel impersonated Jenny Lind, Arthur Middleton, Signor Belletti, and Ole Windingstad, Sir Julius Benedict. Mrs. J. W. Tobin loaned for the occasion the identical spinet used at the concert in 1850. A similar celebration, with Mabel Garrison as Jenny Lind, was held at Worcester on October 31st.—At the 24th biennial Cincinnati Festival, under Eugène Ysaÿe (May 4th-8th), the chief interest was centered upon Berlioz' unknown opera, *Les Troyens à Carthage*, which was given in concert form. It met a cool reception. Other large works produced were Verdi's *Requiem* and Saint-Saëns' *Le Déluge*. The attendance at the festival was unusually small. The 15th annual Bethlehem Bach Festival, under Frederick J. Wolle, took place on May 28th and 29th. In former years the first day was devoted entirely to vocal church cantatas. This year Mr. Wolle varied the purely vocal character of the programme by the introduction of two fine instrumental works, a Suite

and a Concerto, an innovation that met with general approval. The second day, as usual, was given to a magnificent production of the B minor Mass. At California Red Wood Park, under the auspices of the Sempervirens Forest Play Association, the second forest festival took place on July 3d. Eight thousand spectators witnessed a revised and improved version of the preceding year's play, *The Soul of Sequoia*, book by Don W. Richards, music by Howard H. Hanson, who conducted. The annual festival of the Bohemian Club at Bohemian Grove, Cal., began on July 10th with the dedication by Samuel D. Mayer of the new organ built in the open forest. Other recitals were given by Humphrey Stewart, Edwin Lemare, Wallace Sabin, Uda Waldrop, and Benjamin Moore. The festival concluded on July 24th with the presentation of the grove play, *Ilya Muromets*, book by C. C. Dobie, music by Ulderico Marcelli. The 24th annual Maine Festival (Bangor and Portland, September 30th-October 2d), under the direction of William R. Chapman, was made an occasion for the celebration of the centenary of the State's admission to the Union. The programmes, composed largely of works by American musicians, were rendered by native artists. The 62d Worcester Festival (October 6th-8th) marked the initial appearance of its new conductor, Nelson P. Coffin, who proved an excellent and inspiring leader. In memory of Horatio Parker, many of whose works had their first performance at these festivals, the opening concert was devoted to this composer's *Hora Novissima*.—For Berkshire Festival, see *Chamber-music*.

NOVELTIES. The Philadelphia Symphony Orchestra introduced the following new works: Sergei Rachmaninov, *The Bells*, symphonic poem with chorus, after Poe (February 6th), a grandiose, inspired work. Pietro A. Yon, *Concerto Gregoriano* for organ and orchestra, the composer at the organ (March 24th), a severe, even austere work, masterly in thematic treatment, and very effective. John A. Carpenter, *A New World Symphony: A Pilgrim Vision* (November 26th), written specially for the tercentenary of the Landing of the Pilgrims, as dull and devoid of inspiration as most works written to order. Emmanuel Moor, *Concerto for String-Quartet and orchestra* (at New York, December 28th), an original, substantial work.—From the Chicago Symphony Orchestra were heard Leo Sowerby's *Concerto for piano and orchestra*, in F (February 27th), the first two movements of which were surprisingly barren of ideas, whereas the last two exhibited good thematic material and development. Eric De Lamarter, *Concerto for organ and orchestra* (March 26th), very impressive. Victor de Sabata, *Juventus*, a symphonic poem (October 30th), brilliant and exuberant, but rather prolix. Alfredo Casella, *Italia*, Rhapsody for orchestra (October 22d), a very modernistic and inappropriate treatment of seven Neapolitan folk-songs. The Boston Symphony Orchestra contributed Claude Debussy's *Petite Suite*, originally for piano 4 hands, orchestrated by H. Büsser (March 26th), a work of exquisite charm and delicacy. Guy Ropartz, *Divertissement for Orchestra* (October 29th), scarcely interesting. Edward B. Hill, *Poem for Orchestra*, after *The Fall of the House of Usher* (October 30th), extremely impressionistic, even futuristic. Samuel Gardner, Violin-concerto in E minor (at Providence, December 14th), not remarkable, but

effective for the solo instrument. Arnold Bax, *In the Faery Hills*, symphonic poem (December 17th), hardly more than a kaleidoscopic succession of strange orchestral effects. The National Symphony Orchestra gave Francesco Malipiero's *Impressione dal Vero*, 2d series (October 31st), disjointed and meaningless, with occasional reminiscences of Wagner, Debussy, and Puccini. Ernest Bloch, *Suite for Viola and Orchestra* (November 5th), orchestral arrangement by the composer of the original suite for viola and piano, thoroughly original, but difficult to appreciate at first hearing. The New York Symphony Orchestra brought out only one new work in larger form, Vaughan Williams' *London Symphony* (December 30th, conducted by Albert Coates), which can only be characterized as ugly, discordant, and banal. The most important novelty offered by the New York Philharmonic Society was Hugo Alfvén's *Symphony in D minor* (November 26th), a masterpiece of fluent contrapuntal writing, withal very pleasing. The St. Louis Symphony Orchestra presented Emerson Withorne's symphonic sketch *Adventures of a Samurai* (March 20th), well written, but not particularly interesting. The Cleveland Symphony Orchestra contributed Vincent d'Indy's *Le Quête de Dieu*, symphonic interlude from the opera *La Légende de St. Christophe* (October 21st), an imposing, virile piece.

OPERA. At the Metropolitan Opera House in New York 172 performances were given from a repertory of 36 works by 25 composers. According to nationality these were divided as follows: Italian, 20 works by 10 composers totaled 94 performances; French, 7 works by 7 composers totaled 38 performances; German, 5 works by 4 composers totaled 24 performances; Russian, 3 works by 3 composers totaled 12 performances; American, 1 work by 1 composer totaled 4 performances. Puccini, represented by 7 works, had 25 performances; second stood Leoncavallo, with 2 works and 17 performances; while 4 works of Verdi achieved only 16 performances. Fourth honors were divided equally between Donizetti and Wagner, each represented by 2 works and 11 performances. The opera given most frequently was Leoncavallo's *Zaza* (10 times). Next came Wolff's *Oiseau Bleu* and Wagner's *Parsifal* (each 8 times). The first novelty was Leoncavallo's *Zaza* (January 16th), with Farrar, Crimi, Amato, and Kathleen Howard in the principal rôles, under the direction of Moranzoni. Musically the work is very weak, seldom rising above the commonplace, full of reminiscences, especially from Pagliacci. Nevertheless, it was a great personal triumph for Farrar, whose wonderful acting held the audience spellbound. The critics agreed that *Zaza* was her greatest rôle. On January 31st occurred the world-première of Henry Hadley's *Cleopatra's Night*, with Alda, Harrold, and Gordon, conducted by Papi. In spite of rich orchestral color, the music was monotonous in mood and rhythm, while the themes themselves were lacking in power of characterization. Throughout the score the influence of Wagner and Strauss was too much in evidence. Although Tchaikovsky's *Eugene Onegin* was given twice in its entirety in concert-form by the New York Symphony Orchestra (Feb. 1 and 16, 1908), the first scenic representation on March 24th must be regarded as the real American première. On that occasion it was sung in Italian by Muzio, Martinelli, Perini, and

Didur, under the direction of Bodanzky. The actual stage performance only confirmed the impression made in the concert hall, that the music is entirely devoid of dramatic intensity and characterization. Pick-Mangiagalli's ballet *Il Carillon Magico*, with Galli, Rudolph, and Bonfiglio, under Papi, was the last novelty (December 2d). The music was light, graceful, and interesting. A noteworthy revival was that of Boito's *Mefistofele*, splendidly sung by Alda, Easton, Gigli, and Didur, under Moranzoni (November 26th). Less obvious were the reasons for reviving Verdi's *Don Carlos*, not heard in New York since 1874. With Ponselle, Matzenauer, and Martinelli, conducted by Papi, the opera was presented on December 23d. The most important event of the year was the performance of *Parsifal* on February 19th, when an overcrowded house gave unmistakable evidence of delight at the restoration to the repertory of the works of the greatest of dramatic composers. In many respects this representation differed from all previous ones. First of all, it was sung in an English translation made specially by H. E. Krehbiel, which is entirely inadequate. The rôle of Kundry is not well suited to Matzenauer's particular quality of voice. Harrold (*Parsifal*), Rothier (Gurnemanz), and Didur (Klingsor) were decidedly ill at ease in their first attempt in a new and unfamiliar style. Whitehill (*Amfortas*) was hampered by the strange words which he had to substitute for the familiar German. The evident strain under which the singers labored reacted unfavorably upon Bodanzky, who failed to obtain from the orchestra the fine dynamics and elastic tempi which generally characterize his readings. Furthermore, several cuts were introduced, and the long intermission after the first act was discarded. Much adverse comment was caused by J. Urban's new stage-setting as too impressionistic and directly in opposition to Wagner's express directions. The Transformation Panorama in the first and third acts was omitted altogether. The next Wagnerian drama restored was *Tristan and Isolde*, also in English (November 20th). The artists were Sembach, Matzenauer, Gordon, Whitehill, and Blass, the conductor Bodanzky. Enthusiasm ran riot, although the performance did not rise to the level of the performances in German. The reasons for the shortcomings were the same as in the case of *Parsifal*. The new singers, without exception, proved very valuable additions to the company. Carolina Lazzari, familiar to New Yorkers from the visits of the Chicago Opera Company, made her Metropolitan début as Amneris (*Aida*, December 25th). Entirely new names were those of Beniamino Gigli (*Faust* in *Mefistofele*, November 26th), Giuseppe Danise (*Amonasro* in *Aida*, November 17th), Mario Chamlee (*Cavaradosi* in *Tosca*, November 22d), Anna Roselle (Musetta in *La Bohème*, December 4th), Francesca Peralta (Elena in *Mefistofele* (December 25th).

The Chicago Opera Company tried the experiment of a dual directorship, the duties of the late Cleofonte Campanini being divided between Herbert M. Johnson as executive head and Gino Marinuzzi as artistic director. By the end of the year this division of responsibility had caused serious complications, so that the directors began to consider the appointment of a single director general. The first novelty produced was De Koven's *Rip Van Winkle* (January 2d), with

Baklanov, Herbert, and Dufranne, directed by Smallens. The music was rather light in character, but very melodious and pleasing. Ravel's *l'Heure Espagnole* (January 5th), with Gall and Maguenat, under Hasselmans, proved a distinct disappointment. Whirrings of clocks and all possible noises of a clockmaker's shop are reproduced so persistently and realistically that the effect is ludicrous and irritating. Messager's *Madame Chrysanthème* (January 19th), with Miura, Fontaine, and Dufranne, under the direction of Hasselmans, made but a slight impression. The music is unaffected, often quite characteristic, but the story is lacking in action and human interest. Erlanger's *Aphrodite*, produced during the company's visit to New York (February 27th), proved one of the most complete fiascos in the operatic annals of America. The plot is unintelligible, the music hopelessly dull. Even such artists as Garden and Johnson, Hasselmans conducting, failed to elicit a sign of approval from the apathetic audience. A work of very different calibre was Marinuzzi's *Jaquerie* (November 17th), under the direction of the composer, with Gall, Johnson, and Galeffi in the principal rôles. Here a revolting theme—the unsavory *Jus primæ noctis*—is treated with considerable power, especially in the second and third acts. Besides, the tense action is heightened by gorgeous stage effects. The music fairly throbs with passion and works up to several superb climaxes. Another failure was Leoncavallo's posthumous *Edipo Rè* (December 13th), with Ruffo and Francis, Marinuzzi in the conductor's chair. A horrible subject is treated in too realistic a manner with music and unrelieved gloom. Scenes of wild enthusiasm were enacted on December 24th, when, with Raisa, Johnson, Van Gordon, and Kreidler, under the direction of Marinuzzi, *Lohengrin* (in English) marked the restoration of the Wagner dramas to the repertory. The performance was characterized by the same defects as noted in the Metropolitan revivals of *Parsifal* and *Tristan*. Two new conductors, both authoritative and capable, made their debuts: Pietro Cimmini with *I Gioielli della Madonna* (November 18th) and Henri Morin with *Le Chemineau* (November 23d). At his debut in the title rôle of Verdi's *Otello* (December 29th), an American tenor, Charles Marshall, fairly hypnotized the audience by the marvelous quality and power of his voice, as well as by his extraordinary histrionic ability. Two other new artists made a favorable impression: Olga Carrara, as Glorianda in *Jaquerie* (November 17th), and Carmen Pascova, as Carmela in *I Gioielli della Madonna* (November 18th). The company's third season in New York (January 26th–February 28th) was in all respects as successful as the earlier visits. Unusual enthusiasm was aroused by the appearances of Titta Ruffo, whose rare art had not been fully appreciated by New York, where he had been heard in 1912 in concert and a single stage performance of *Hamlet*. Of the works produced the following were new to the metropolis: Messager's *Madame Chrysanthème* and Ravel's *l'Heure Espagnole* (both on January 28th), De Koven's *Rip Van Winkle* (January 30th), Borowski's *Boudoir* (February 16th), Carpenter's *The Birthday of the Infanta* (February 23d), and Erlanger's *Aphrodite* (February 27th; at the same time the American première; see above).

BIBLIOGRAPHY, REFERENCE. Grove's Dictionary

of *Musio and Musicians, American Supplement*, edited by W. S. Pratt and C. N. Boyd (New York), contains, besides the usual information regarding individuals and institutions, a valuable history of music in America with full chronological reference lists.—BIOGRAPHY. J. N. Forkel, *Johann Sebastian Bach* (London), new translation by Terry Sanford, far superior to the older translation by Wesley (1828); Sanford has added numerous notes and very valuable appendices. David Bispham, *A Quaker Singer's Recollections* (New York), an interesting series of personal and professional reminiscences. George Lowe, *Josef Holbrook and His Work* (London), a careful and reliable study, strictly impartial. Harold V. Milligan, *Stephen C. Foster. A Biography of America's Folk-Song Composer* (New York), very valuable, as author had access to original sources. James G. Huneker, *Steeple-Jack* (2 vols., New York), an autobiography with interesting sidelights on eminent contemporaries.—ESSAYS, CRITICISM. Harriet Brower, *Vocal Mastery* (New York), a series of interviews with eminent singers expressing themselves on various phases and problems of their art. James G. Huneker, *Bedouins* (New York), essays in a rather exaggerated and grotesque style. Paul Rosenfeld, *Musical Portraits* (New York), a study of 20 modern composers attempting to show how far the moderns have surpassed Wagner. Walter R. Spalding, *Music: An Art and a Language* (Boston), a valuable contribution to the appreciation of the art.—HISTORY. Albert Lavignac, *Encyclopédie de la Musique et Dictionnaire du Conservatoire* (Paris), vol. 4 of Part I, containing the history of music in Spain and Portugal.—TECHNIC and THEORY. Eleanor McLellan, *Voice Education* (New York), eminently practical, concerned mainly with the correction of defects. Everett E. Truette, *Organ Registration* (Boston), a very full treatise on the distinctive quality of tone of the various stops, with numerous practical illustrations.

MUSIC WEEK. See MUSIC, GENERAL NEWS.

MUTTON. See LIVE STOCK.

NAPIER, TREVELYAN D. W. British admiral, died, July 30. He was born, April 19, 1867, and entered the royal navy in 1880. After serving in the Egyptian war he became lieutenant and in 1899 commander. He was in command of the *Crescent*, 1904–07, and of the second light cruiser squadron in 1913. He served throughout the late war and was mentioned in dispatches for service in the battle of Jutland.

NASHVILLE SYMPHONY ORCHESTRA.

See MUSIC, Orchestras.

NASMYTH, GEORGE (WILLIAM). Sociologist, died, September 20. His life was largely devoted to the promotion of international understanding and peace. He was born at Cleveland, Ohio, July 19, 1882; graduated at Cornell University in 1906; and studied at the German universities and at Harvard. After visiting the universities of the European nations in the interests of the International Student Movement, he became an instructor of physics at Cornell, 1906, holding that chair until 1910. From 1911 to 1913 he was president of Corda Fratres, the International Federation of Students. From 1917 to 1919, he was head of the administrative division of the United States Fuel Administration. In 1919 he was a press representative at the Paris Peace conference and also delegate at the inter-

national meeting of the world alliance for promoting international friendship through the churches at The Hague. He wrote *Social Progress and the Darwinian Theory* (1916).

NATAL. An original province of the Union of South Africa. See SOUTH AFRICA, UNION OF.

NATIONAL BANKS. According to the United States Comptroller of the Currency the number of national banks in operation reached its highest point during the fiscal year ending June 30, 1920. On Oct. 31, 1919, the number of national banks in operation or authorized was 8157. From Mar. 14, 1900 to October, 1920, 2828 State banks, trust companies, and private banks, with capital of \$183,554,800 were converted into, or reorganized as national banks, and the movement toward nationalization was proceeding steadily. During the year ending Oct. 31, 1920, the 361 new national banks chartered were distributed through 40 different States and the District of Columbia. The 14 States in which the largest number of national banks were chartered are Minnesota, 32; California, 30; New York, 26; Texas, 22; Oklahoma, 21; Kansas, 19; Illinois, 17; Pennsylvania and Ohio, 14 each; New Jersey, Virginia, and Colorado, 13 each; Washington, 12; Idaho, 11.

In the number of depositors or deposit accounts in national banks all previous records were exceeded, official reports showing that on June 30, 1920, there were 20,520,177 deposit accounts in all national banks. This was an increase of 2,279,877 over June 30, 1919. There was approximately one depositor in the national banks for every five of our population.

In the matter of immunity from failure, the showing for the twelve months was the best in about 40 years, with the sole exception of the fiscal year of 1919. The total capital of the five small national banks which failed during the year was \$225,000, or seventeen one-thousandths of 1 per cent of the total capital of all national banks. This percentage is about 16 times better than the average for the entire period of 57 years, from the inauguration of the national banking system to the present. The earnings of the national banks, both gross and net, surpassed all previous years. The net earnings for the twelve months ending June 30, 1920, amounted to \$282,083,000, an increase of \$41,717,000 over the year preceding; and the increase which took place in the *net earnings* of the national banks in the past seven years exceeded by \$18,000,000 the total increase in earnings shown for the 43-year period from 1870 to 1913.

During the fiscal year 1920, the resources of the national banks reached the highest point in their history, being reported on Jan. 1, 1920, at \$22,711,375,000. This was an increase, as compared with the report for Jan. 1, 1919, of \$2,669,151,000. In the six months following Jan. 1, 1920, the resources of national banks declined to \$22,196,737,000, at which figure they stood on June 30, 1920. In the 7-year period from June, 1913, to June, 1920, the resources of national banks increased \$11,159,817,000, which is more than the total increase which took place in the entire 50 years from the inauguration of the national banking system in 1863 to the year 1913.

On June 30, 1920, national banks had invested in loans and discounts \$13,627,897,000 and in United States government securities and other bonds and securities \$4,186,465,000, the total

of such investments being \$17,814,362,000, representing 76.09 per cent of their aggregate assets, which amounted (including rediscounts) to \$23,411,253,000 on the date named. Liabilities included the following items: Capital stock, \$1,224,166,000; surplus fund, \$986,384,000; undivided profits, \$459,139,000; demand deposits, \$10,219,824,000; time deposits, \$3,485,501,000.

NATIONAL CIVIC FEDERATION. This society is for the promotion of better civic conditions throughout the country. It operates chiefly through its organ, the *National Civic Federation Review*, which during 1919 and 1920 was conducting a strong campaign against Bolshevism, under the direction of Ralph M. Easley, its editor. In April it published a "Declaration Against Recognition of Soviet Russia" to which there were about 400 signers, among whom were many prominent names. The 20th annual meeting of the Federation was held at the Hotel Astor, New York, on January 29th and 30th. Among the subjects under discussion were "Increased Production Through Industrial Training," "Arbitration, Conciliation, and Collective Bargaining," "Compulsory Sickness Insurance," "Workmen's Compensation—Occupational Disease," "The Revolutionary Forces in Our Midst," "The Demand for Amnesty for Pacifists, Conscientious Objectors, and Anarchists." All these subjects were discussed by a number of persons. Miss Maude Wetmore, chairman, presented the report of the Women's Department to the Federation. She reviewed the work done by the department during the war, which was extensive, and then urged attention upon the teachers in the school in whose hands the training of each new generation rests, to the matter of keeping Bolshevism out of the country.

Much attention has been given by the Federation to the labor situation in England, and various studies of labor conditions in that country have been made by members of the Federation. In 1917 delegates sent over by Premier Lloyd George toured this country to inspect conditions over here under the auspices of the Federation. Special attention was given to the report of the Committee on a Constructive Plan of Social Insurance, of which Dr. Alvah H. Doty was chairman. The report showed that universal workman's health insurance is established in not fewer than 10 of the leading Continental countries of Europe; that compulsory insurance would reduce the public expense of poor relief; and that prevention is primarily the purpose of insurance and certainly its result. Officers of the Federation in 1920 were: President, Judge Alton B. Parker; vice-president, Samuel Gompers; treasurer, Morgan J. O'Brien; and chairman executive council, Ralph M. Easley. Headquarters are maintained in the Metropolitan Tower, New York City.

NATIONAL DAIRY COUNCIL. See DAIRYING.

NATIONAL EDUCATION ASSOCIATION. See EDUCATION IN THE UNITED STATES.

NATIONAL FORESTS. See FORESTRY.

NATIONAL GUARD. See MILITARY PROGRESS.

NATIONAL MUNICIPAL LEAGUE. An organization founded in 1894 for the study of municipal problems, and the dissemination of information on the subject. During the past few years the scope of the League's activities has broadened to include county, and State government. The 26th annual meeting was held in

Indianapolis, Nov. 17th to 19th, 1920, at which time the progress report of the committee on State government, covering essential features of a model State constitution, was submitted. The report as approved provides for a single chamber Legislature elected by proportional representation, and a governor with power of veto and of appointment and removal of all executive heads without the approval of the legislature. A legislative council consisting of members elected by the legislature is provided. This will be a sort of standing committee of the legislature to sit from time to time throughout the year and conduct investigations and conduct legislation for introduction. It is also designed to serve as a connecting link between the executive and the legislature, to increase the harmony between them. It is the most radical feature of the model constitution. The constitution throughout adheres to simple direct statements and excludes matters of legislative detail. Other features of the annual meeting were sessions on service at cost for street railways, the housing crisis, and the city manager plan of government. The banquet session was devoted to the subject "The Fate of the Direct Primary." Mr. Hughes' Presidential address bearing this title.

The *National Municipal Review*, now published monthly, issued a number of supplements which constitute important studies on various problems. Among these may be mentioned the ones on Centralized Purchasing in State Government, Zoning, Presidential Primary, Employment Standardization in Public Service, the Law of the City Plan, Administrative Reorganization in Illinois, and Service at Cost for Street Railways.

Committees are actively at work on a model election law, a model municipal bond act, a model pension law, city-county consolidation, and State government. During the year Mr. H. W. Dodds succeeded Mr. Clinton Rogers Woodruff as secretary of the League. Mr. Woodruff retired after 25 years of service. The following officers for 1920 were reelected: President, Charles E. Hughes; treasurer, Frank A. Vanderlip; honorary secretary, Clinton Rogers Woodruff.

NATIONAL PARKS. See PARKS, NATIONAL.

NATIONAL SAFETY COUNCIL. The ninth annual Safety Congress was held in Milwaukee, September 27th to October 1st of this year, President Richards presiding. This organization, the leading one of its kind, has made great progress during the year in the prevention of accidents in industries, in the streets, and in the homes. There were 3100 registered delegates and at least an equal number of unregistered visitors at the Congress, making it the most successful in the history of the society. During the year 10 new local councils with paid secretaries have been organized, making a total of 16, besides which there are 21 local councils without paid officers. During the year, the *National Safety News*, expanded from a one sheet bulletin to a 12 page magazine, was most useful in spreading safety propaganda throughout the country. Great strides were made in public safety through the development of vigilance committees, chauffeurs' schools, local safety drives, and safety education in public schools. Founded in 1913 with 40 members, it now includes in its membership more than 15,000 factories, railroads, insurance companies, technical schools, governmental agencies, etc., employing an aggregate

of more than 6,000,000 workers. Officers for 1920-21 are: President, C. P. Tolman; general manager, C. W. Price; secretary and chief engineer, S. J. Williams; and treasurer and business manager, W. H. Frater. Headquarters are at 168 N. Michigan Avenue, Chicago.

NATIONAL SYMPHONY ORCHESTRA.

See MUSIC, *Orchestras and Novelties*.

NAVAL ACADEMY, UNITED STATES.

See UNITED STATES NAVAL ACADEMY.

NAVAL PROGRESS. The naval situation differs but little from that of last year. Only the United States and Japan have laid down new capital ships (i.e. ships of the highest fighting qualities—battleships and battle cruisers). Other naval powers, oppressed by the burden of great war debts, hampered by the general disturbance to industry and trade engendered by the war, and feeling that their naval forces will suffice for present purposes, are exercising the greatest practical economy in administering naval affairs. Great Britain is discarding all old and inefficient vessels, laying down no new ones, and completing only such craft as were so far advanced and of such desirable type as to render this step economical and advisable. France has a feeble programme of construction consisting of a few light cruisers, destroyers, and submarines. Italy is following the example of Great Britain but has not yet gone so far in disposing of her old and inefficient ships. Austro-Hungary has disappeared as a political entity and as a naval power; and only one of the states carved from her territory has any seacoast. Russia is sunk so deeply in a chaos of oppression, murder, starvation, and terror as to make the remains of her once great navy a feeble but ghastly jest. The condition of the German navy as regards organization, morale, and material is not much better than the Russian and she is forbidden to strengthen it until the terms of the Versailles treaty are fully complied with. The Turkish navy has wholly disappeared without hope of resurrection. Spain is building feebly and has developed a new programme of construction but there is some doubt of its being carried out. None of the lesser powers are seriously considering the construction of important vessels, though Chile is receiving some of the warships commandeered by Great Britain at the outbreak of the war.

Nearly all the merchant vessels used as auxiliaries during the war have now been returned to their original owners or sold. Many old cruisers have been transformed into merchantmen before or after sale to private parties. In France the armored cruiser *Dupuy de Lôme* has thus been altered, while in Italy the dreadnought battleship *Caracciola*, only partly completed, will be finished as a merchantman, and the *Leonardo da Vinci*, which has been refloated after being sunk, is to be turned into a mercantile oil tanker.

While the naval powers are, with the exceptions noted, refraining from much new construction because of their high taxes and unfavorable industrial conditions, the lessons of the war are being studied and the most desirable changes and improvements in naval policy as concerns organization, equipment, and operation considered. It is hoped by such study and consideration that, when easier financial conditions permit further naval development, it will proceed along lines which are adequate and desirable from the military standpoint as well as economically correct.

The question of the most efficacious types of war vessels is being again argued. The points at issue as regards vessels are chiefly the old ones of size, speed, armament, and protection—the latter exhibiting more points of novelty as the development of the submarine and aircraft during the war directly affects protection while it affects the others only through its bearing upon general naval policy.

The submarine danger in its effect upon design was considerably discounted in prewar design by the very general increase in internal armor below the waterline and in careful subsurface subdivision. The most noteworthy protective device which is being fitted to large war vessels because of war experience is the "bulge" developed by the British. This is an extension of the cellulose belt idea of former days combined with cellular subdivision. In the earlier ships it was applied to the already completed hull and thus formed an actual bulge which materially decreased the vessel's speed. In the new ships, the lines are faired so as to give an underwater body suitable for high speed. Of course the hull space available for ship purposes is necessarily narrowed.

The effect of aircraft upon design is chiefly through its action upon naval strategy and tactics; but bombing planes and airships fitted with non-inflammable gas can effectively attack ships from above, while torpedo planes may prove more dangerous than surface or submarine torpedo boats.

The disappearance of the Austro-Hungarian navy, the reduction of Germany and Russia to secondary rank, and the rise of Japan cause the relative standing of the principal navies of the world to be as follows: 1, Great Britain; 2, United States; 3, Japan; 4, France; 5, Italy.

The table on opposite page is derived from *Sea Power* and includes all vessels built and building for the principal navies but does not include those authorized or proposed but not actually commenced before March 1, 1920.

The following brief notes give a general idea of the present condition of the navies of the world as regards new construction, policy, and recent or proposed activities.

ARGENTINE NAVY. No definite plans have been made for the increase or improvement of the navy but the government has asked the Argentine Congress for an appropriation of \$80,000,000 for increasing the power of the navy and developing the merchant marine.

AUSTRALIAN NAVY. This is independent of the British navy but is designed to coöperate with it in case of war. The cost is wholly borne by the Australian Commonwealth. The naval ensign, recently adopted, consists of a rectangular flag, the upper half red and the lower half blue, with a horizontal gold anchor at the centre. The present naval force consists of 1 battle cruiser of 18,800 tons, 3 fast light cruisers of 5400 tons, 2 old protected cruisers, 12 destroyers, and several auxiliaries. Admiral Lord Jellicoe who was recently sent on a naval mission to Australia has recommended the establishment of an Australian naval unit composed of 8 modern battle cruisers, 12 light cruisers, 24 destroyers, 12 submarines and supply ships; the programme to be completed in 1923 at a cost of £5,000,000 annually. The carrying out of the programme is highly improbable at this time.

BELGIAN NAVY. Before the war the Belgian naval force consisted of coast guard and trans-

port vessels only. It is now proposed to build several submarines. Belgian engineers have been sent to Italy to take a course in submarine construction.

BRAZILIAN NAVY. The effective force of the navy consists of 2 dreadnought battleships of 20,000 tons (each carrying 12 12-inch guns), 2 fast light cruisers of 3150 tons and 27 knots speed, and 10 destroyers of 650 tons and 28 knots. It was proposed to build 2 light cruisers but owing to the great cost this plan has been given up and the present programme consists of 2 light cruisers of 4000 to 5000 tons, 5 destroyers of 1100 to 1200 tons; 3 submarines of 800 tons, and 6 of 250 tons.

CANADIAN NAVY. This force in time of war forms part of the fleet of the British Empire. In times of peace it is supported by Canada but is partly officered by the British navy. The Canadian naval college is at Halifax.

CHILEAN NAVY. In 1914 there were under construction in England for the Chilean navy 2 28,000 ton battleships designed to carry 10 14-inch guns each. At the outbreak of war these vessels were taken over by Great Britain. One (the *Almirante Latorre*) was nearly completed and in a short time joined the Grand Fleet under the name of the *Canada*. The other (the *Almirante Cochrane*) was not nearly so far advanced and was completed as the *Eagle*, aeroplane carrier. Some months since, the *Latorre* began refitting in order to proceed to Chile. The *Eagle* may be reconstructed as originally designed but this is doubtful. Final arrangements between the British and Chilean governments have not yet been completed. It is stated that Great Britain will sell to Chile two light cruisers (*Dartmouth* and *Southampton*—5400 tons, 26 knots, 8 6-inch guns) and 4 gunboats, and will return in good order the flotilla leaders which she commanded at the same time she took over the *Latorre*.

FRENCH NAVY. For 40 years France has been seeking a cheap substitute for the battleship. First the torpedo boat, then the *guerre de course* and then the submarine. Now she favors the submarine as the prime weapon against warships and merchantmen—only the legitimate humane use against the latter—also the seaplane, torpedoplane, and airship. In other words she accepts a defensive policy for the future. This is unquestionably a matter of financial inability. Before the war the French felt that they could not support a great army and a great navy and they chose the former as the prime necessity. With the ever present threat of German aggression she chose rightly and rounded out her line of defense by alliance with Great Britain. In her present outlook she sees no probable foe among the great naval powers and is proceeding to cut expenses to the uttermost consistent with safety and efficiency. None of the proposed battleships of the *Turville* class will be proceeded with. Four of the *Normandy* class of 24,800 tons will be completed; the other, the *Bearn*, will be broken up or turned into a merchant ship or auxiliary. To correct defects in the fleet as it stands to-day the Landry programme calls for an expenditure of 645,200,000 francs and the construction of 6 light cruisers of high speed (45,000,000 each), 12 flotilla leaders of 1800 to 2000 tons (20,000,000 each), and 12 submarines of 500 to 1200 tons. France had no modern light cruisers and no flotilla leaders; the submarines are

THE FIVE GREAT NAVIES. VESSELS BUILT AND BUILDING
Numbers and Tonnage, March 1, 1920

Class	Great Britain		United States		Japan		France		Italy													
	Built	Building	Built	Building	Built	Building	Built	Building	Built	Building												
Super-dreadnought ..	No. 23	Tons 576,250	No. 0	Tons	No. 11	Tons 819,300	No. 13	Tons 454,200	No. 4	Tons 123,600	No. 4	Tons 128,000	No. 8	Tons 69,531	No. 0	Tons	No. 0	Tons	No. 5	Tons 108,360	No. 0	Tons
Dreadnought	10	199,630	0	.....	7	115,650	0	.....	1	21,400	0	.....	4	92,380	0	.....	4	48,700	0	.....	
Pre-dreadnought	14	214,900	0	.....	14	208,500	0	.....	6	99,800	0	.....	10	165,999	0	.....	0	.....	0	.....	
Battle cruiser	9	206,800	1	41,100	0	.....	6	261,000	0	.....	4	110,000	4	160,000	0	.....	0	.....	0	.....	
Coast defense vessels ..	30	801,790	0	.....	16	124,885	0	.....	7	78,166	0	.....	8	81,612	0	.....	6	59,788	0	.....	
Cruisers	94	545,740	9	66,280	19	162,190	13	97,000	18	134,500	9	45,000	13	143,531	0	.....	10	38,000	0	.....	
Fleet leaders	33	56,647	2	8,500	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....	8	10,832	6	11,384
Destroyers	881	395,551	3	8,890	181	199,500	144	174,468	65	51,175	24	25,800	64	36,808	1	870	35	22,766	10	8,740		
Torpedo-boats	81	8,700	0	.....	4	16,080	0	.....	9	1,248	0	.....	67	6,610	0	.....	96	15,155	4	640
Submarines	200	181,526	12	14,200	113	57,250	48	89,850	17	6,200	18	18,900	58	34,752	9	6,078	77	21,327	8	2,556		
Mine planters	6	32,100	0	.....	4	16,080	0	.....	1	2,000	0	.....	2	1,184	0	.....	4	13,178	0	.....	
Air-craft carriers	10	107,870	1	26,200	0	.....	0	.....	1	7,600	0	.....	0	.....	0	.....	1	8,800	0	.....	
Australian fleet	5	27,568	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....	0	.....	
Total	846	2,854,672	28	155,240	869	1,219,435	223	1,026,513	133	635,689	59	377,700	224	582,352	10	6,968	246	357,856	28	28,323		

provided for to prevent a check in submarine development.

GERMAN NAVY. The naval force left to Germany is negligible in power. It consists of the pre-dreadnought battleships *Deutschland* (lchd. 1904), *Hannover* (1905), *Schlesien* (1906), *Schleswig-Holstein* (1906)—all of 13,000 tons, 4 11-inch guns; *Lothringen* (1904), *Braunschweig* (1902), *Elsass* (1903), *Hessen* (1903)—all of 13,000 tons and 4 11-inch guns. The light cruisers retained are the *Berlin* and *Hamburg* (1903—3200 tons, 23 knots, 10 4.1-inch guns), *Arcona* (1902—2700 tons, 21 knots, 10 4.1-inch guns), *Amazone*, *Medusa*, and *Thetis* (1900—2650 tons, 22 knots, 10 4.1-inch guns). There are 12 destroyers of about 600 tons and 10 years old. Not one of the foregoing vessels would be retained in a modern navy as a part of the fighting force. Five modern fast light cruisers were to be retained under the provisions of the Versailles treaty but after the sinking of the ships at Scapa Flow these were required to be given up together with floating docks, floating cranes, tugs, and barges equivalent to a displacement of 400,000 tons. However, the number and power of the ships retained in the German navy are not of the least importance. Discipline, obedience, and patriotism have disappeared and the result is a "pseudo-navy run upon trade-union lines and administered by soviets." The demoralization of the naval service is so complete that there is little probability of the formation of an efficient navy for many years to come. The German admiral, Hollweg, regards any attempt to reorganize the old naval forces as impossible. The officers are all right but the men are hopelessly filled with soviet and revolutionary doctrines which would make a well organized and disciplined navy absolutely impossible. Since both Kiel and Wilhelmshaven are hotbeds of sovietism, anarchism, and extremely radical socialistic doctrines, the admiral believes it will be necessary to discard both as naval bases as well as to disband every part of the existing naval forces and start in new localities with new men. Before the war, German naval officers held themselves on a very high plane indeed. It was often said that the wardrobe of a German warship was more exclusive than the court of Austria. This *de haut en bas* attitude maintained toward the enlisted force worked fairly well as long as Germany succeeded in her aims; but as soon as defeat became of more than average occurrence, discipline began to waver: the battle of Jutland and the horrors of the submarine service were the final disrupting forces.

GREAT BRITAIN'S NAVY. The British Admiralty is making an extremely earnest effort to re-attain prewar expenditures and is going about the work in a very thorough way characteristic of the nation. The total of the naval estimates for 1920-21 is £96,490,181 and may be divided as follows:

(a) Non-recurrent war liabilities or terminal charges	£19,077,000
(b) Recurrent expenditure due to war conditions, e.g. increases in prices and in rates of wages, pensions, etc., and separation allowance	40,023,200
(c) Normal expenditure on the basis of pre-war rates and prices	37,489,981

The gross estimates for 1914-15 were £53,573,261. Deduct from this the amount allotted to new construction (£18,373,000) and we have £35,200,261. Compare this with subdivision (c) of the present estimates and we find it is £2,290,-

000 greater, due mainly to the following causes: the grant of clothing allowances to men of the fleet; provision of larger hospital ships; the extension of scientific research and of technical training; reduction in working hours of industrial staff; increase in non-effective charges. A careful examination of the foregoing shows that the admiralty has achieved its aim (to reduce expenditures to prewar conditions) as nearly as is compatible with present prices of material and labor and the rates of pay in service. In order to keep down the amount allotted for pay nearly to the former figures, the personnel is reduced to 127,500 which is 23,500 less than in 1914.

In order to keep expenditures to the figures of the estimates it has been necessary to adopt every available economy. The most obvious means of saving money was the immediate sale or preparing for sale of all war vessels of a type not desirable to maintain or repair. The next step was to place out of commission all vessels not necessary for the revised peace establishment. Up to May 1, 1920, exclusive of auxiliary craft derived from the merchant service and of old naval craft which had been condemned but rearmed during the war, the following vessels were placed out of commission: 14 battleships, 2 battle cruisers, 16 protected cruisers, 33 light cruisers, 17 monitors, 76 sloops, 68 mine sweepers, 47 patrol boats, 10 flotilla leaders, 220 destroyers, 40 torpedo boats, 55 submarines. Four of the dreadnought battleships which were placed out of commission were subsequently reported in Parliament by the First Lord of the Admiralty as not required for the post-war fleet; the same report was made concerning the two battle cruisers. The battleships in question are the original *Dreadnought* (17,900 tons, launched 1906), *Superb* and *Belierophon* (18,600 tons, launched 1906-07), *Agincourt* (ex-*Birinji Osman*—ex-*Rio de Janeiro*—launched, 1913; taken over at the outbreak of war). The battle cruisers are the *Inflexible* and *Indomitable* (17,250 tons, launched 1907). All armored cruisers, protected cruisers, and small destroyers are condemned for fleet service and will be sold or otherwise disposed of. The new battle cruiser *Hood* was completed during 1920. No other battleship or battle cruiser is building. Three classes of light cruisers are in hand—the *Dragon* class of 4720 tons, the *Enterprise* class of 7500 tons, and the *Raleigh* class of 9750 tons.

It is reported that the Haulbowline dockyard at Queenstown is to be abandoned and that the Pembroke yard in Wales is to be leased to be Vickers Company for a long term of years. Of the other yards, three are to help the merchant marine—for a time at least.

The Admiralty pronounces very definitely on the subject of capital ships, the First Lord stating that in the opinion of the Board the lessons of the war plainly point to the battleship as the proper type of the maximum fighting unit. Its details will doubtless change to meet existing conditions but it will still remain paramount, no matter how greatly improved are the means for aerial and submarine navigation. The First Lord's memorandum also refers to a permanent bureau of scientific research, to the education and training of officers and men, to the naval staff, the naval air service, the promotion of enlisted men to commissioned rank, and to the formation of a new naval reserve.

The department of scientific research and experiment has a director in charge and is placed

under the Controller of the Navy. The director is a scientist of adequate capacity to act as adviser to the Controller and to the navy in general on all matters connected with the application of new advancements in scientific knowledge to the requirements of naval engineering, explosives, chemistry, signalling, mining, etc. The number of assistants of the director and other facilities enable original research work to be undertaken and also permit the department to keep in touch with new work in other scientific establishments.

In technical training of officers and men there will be much more attention paid to mining than before the war, the submarine instruction will be considerably extended, and a new school for anti-submarine work is being established.

The education of officers is being considerably changed. Both line and engineer officers start as cadets. The common entry cadets are taken at 13½ to 14 years, special entry at about 17. The establishment at Osborne is closed and all cadets are now sent to Dartmouth where they remain 3 years and 8 months; then 8 months on a training battleship. They are now sent as midshipmen on ships of the regular service for 2 years and 6 months; then, upon passing they become sublieutenants for one year before promotion to the grade of lieutenant. Midshipmen of one year's service may volunteer for specialization in engineering—as may sublieutenants. After serving a certain time (during which they may return to the line) the engineer officers become permanently of that branch. The exact period of time has not yet been settled. To make the promotion in the two branches fairly equitable, certain high ranks, responsibilities, and duties are provided for officers of the engineer branch, both afloat and ashore. Special arrangements are made for promoting enlisted men to commissioned rank at 17½ to 18½ years, 21 years, or at a somewhat later period, provided they can pass certain examinations and boards of selection.

One of the most important features of the First Lord's memorandum is the planning of the new naval staff. Forty officers will receive instruction per year and for this purpose a Naval Staff College has been established at Greenwich. The naval staff is under the Chief of the Naval Staff. His subordinates are: The Deputy Chief of the Naval Staff who is responsible for operations, policy, intelligence, and training; and the Assistant Chief of the Naval Staff who is responsible from the staff side for the development and use of material including types of vessels, weapons, and tactics. A War College for the instruction of senior officers, in policy, strategy, tactics, etc., will also be maintained at Greenwich.

A separate naval air service will not be maintained but the Naval Staff and Air Staff will be kept in touch as to requirements and the naval branch of the air forces will be wholly under naval command when operating for the navy afloat or ashore.

The formation of a naval reserve on new lines had not proceeded far enough for the First Lord to make a definite statement concerning it. The plans were still under consideration by a naval board.

ITALIAN NAVY. The Italian navy, like those of the other European powers, is being forced to practice the most rigid economy. No new con-

struction is now contemplated though a few destroyers, submarines, and small gunboats are in hand. All old and ineffective ships are being sold except where they can be made use of as auxiliaries or harbor craft. This reduction in *material* is being accompanied by an equally drastic cut in *personnel*. The numbers in each grade of the line (executive) and engineer corps are as follows:

Line Grade	No.	Engineer Corps Grade	No.
Admiral	1	Lieutenant-general ...	0
Vice-admiral	9	Major-general (chief) ..	1
Rear-admiral	20	Major-general	2
Commodore	9	Brigadier-general ...	1
Captain	65	Colonel	9
Commander	114	Lieutenant-colonel ...	20
Lt.-commander	180	Major	48
Lieutenant	425	Captain	146
Sub-Lt. and midship- man	275	1st and 2d lieutenants	179

JAPANESE NAVY. Japan is the only naval power outside of the United States which is greatly strengthening its naval forces. These two are the only great powers whose shores are washed by the Pacific and each undoubtedly feels it necessary to maintain a navy sufficiently strong to protect its own interests. Before the war each navy bore about the same relative position towards the other that it does now; and neither was adding to its forces except in a moderate way. The possibilities opened up by the war awakened the United States government with a severe jolt and it did not rest until it put out the greatest building programme ever approved by a government at one time. The finances of Japan being greatly improved by her position in the war, she was able to follow the United States in the hasty increase of naval force.

Four battleships of 31,200 tons were completed during or since the war. Two others (*Negato* and *Mutsu* of 33,800 tons, 23.5 knots, 8 16-inch guns) have been launched while two more of the *Negato* class have been commenced. In the intensive 8 to 8 building programme of Baron Kato, eight superdreadnought battleships and eight superdreadnought battle cruisers were to be built. The battleships are already mentioned. Of the battle cruisers, four were completed during the war. These are of 27,500 tons, 28 knots, and carry 8 14-inch guns. The new battle cruisers are of 40,000 tons, 30 knots speed, and carry 10 16-inch guns. Two were commenced in 1919, two in 1920. The names are the *Akagi*, *Amagi*, *Takao*, and *Atago*. Four similar vessels are projected, to be completed in 1927 or 1929. The Japanese grand programme also calls for 4 more battleships, 8 light cruisers of 6000 tons, 24 light cruisers of 5000 tons, 32 destroyers of 1300 tons, 32 destroyers of 850 tons, 24 submarines of 1300 tons, 40 submarines of 800 tons, 12 special duty ships of about 12,000 tons. The entire programme is to be completed by 1927.

JUGO-SLAVIAN NAVY. The Jugo-Slavian state has established a navy department. In January, 1920, the government dispatched to the Allies and especially to Italy, a note making claim to a portion of the former Austrian navy. The vessels cited are the 4 cruisers of the *Spaun* type, 19 destroyers of the *Duklja*, *Tatra*, and *Hussar* types, 52 torpedo boats, and all the submarines and hydroplanes remaining at the former Austrian bases. Claim was also made to 18 auxiliary and school ships, 6 Danube monitors, 2 river

tugs, and a vast amount of mines, torpedoes, machinery, and stores at Pola, Fiume, and elsewhere.

NETHERLANDS NAVY. No new construction was undertaken in 1920 on account of a sharp difference of opinion in Parliament as to the plans for naval expenditure. Even the work on the two cruisers building for colonial service since 1916 was stopped.

NEW ZEALAND NAVY. Like many other British colonies, New Zealand is arranging for a naval force of her own. The old protected cruiser *Diamond* of 3000 tons has been commissioned in England and sent out to New Zealand to serve as a school ship.

NORWEGIAN NAVY. No new construction is planned. The naval estimates for 1920 were 15,828,000 crowns. The sum of 750,000 crowns is allotted to new construction already in hand, and 250,000 to naval aviation. Norway lost the greater part of her merchant marine during the war by the ruthless submarine campaign and naval construction will probably give way to merchant ship building for some time to come.

POLISH NAVY. Poland intends to have a small naval force but so far nothing definite has been decided as to the matter.

PORTUGUESE NAVY. The only change in the Portuguese navy consists in the acquirement of 6 gunboats (called sloops by the English) which were purchased of the British naval authorities.

ROUMANIAN NAVY. In 1913, the Roumanian government ordered 4 destroyers of 1450 tons and 35 knots speed of Pattinson, Naples. These were not ready for delivery before Italy entered the war, so they were commandeered and completed for her use. Two of them have recently been turned over to the Roumanian government. Four small river gunboats have been purchased in France for use on the Danube.

RUSSIAN NAVY. The wholly disorganized Russian navy is slowly disappearing. Some few vessels have been kept out of Bolshevik hands and are in various foreign ports. About half of the important ships have been destroyed and nearly all the others are useless from lack of care. Such control as is given the scattered remains of the fleet can make no important use of vessels whose crews are without honor, knowledge, patriotism, or discipline; the vessels themselves are out of repair and lack every sort of supplies and equipment; and the directing forces have no continuity of purpose to maintain themselves in power. Unless the Bolsheviks are overthrown, the material of the fleet will be wholly destroyed or dissipated in another year or two. The personnel of the navy disappeared in the first burst of revolution. The discipline of the Russian service was of a brutal type; the officers were overbearing, harsh, and generally incompetent as compared to the officers of the other great naval powers; the men were extremely ignorant and stupidly subservient. The service was honeycombed with fraud, dishonesty, and lack of patriotism and (especially) of *esprit de corps*. Here was an ideal field for Bolshevik propaganda; and it swept away the whole organization in a moment.

SPANISH NAVY. The publication of a new building programme for the Spanish navy is not of infrequent occurrence; but many programmes are turned down later and others are not usually carried out in all respects. The construction now in hand is made up of the fag ends of the

programmes of 1908, 1914, and 1915. The present budget (1920-21) allots 34,000,000 pesetas (1 peseta at par = 19.3 cents) for new construction. One battleship and three destroyers of the 1908 programme are completing. A light cruiser of the 1914 programme was launched in April, 1920. The programme of 1915 was quite extensive as follows: four light cruisers of 4650 tons and 29 knots, six destroyers of 1125 tons and 34 knots, 28 submarines, and three gunboats. There are building in Spain, two of the cruisers, three of the destroyers, six of the submarines, and three gunboats. Four of the submarines are completed. One of these, the largest, named the *Isaac Peral* (742 tons submerged, 488 on the surface) was built in the United States by the Electric Boat Company.

SWEDISH NAVY. No new vessels were proposed or placed under construction in 1920. The allotments for the development of naval bases which were derived from previous appropriations were drastically cut and the work is being prosecuted more slowly.

TURKISH NAVY. By the terms of the peace treaty the Turkish navy is eliminated. Turkey no longer has a seacoast under her own unrestricted control.

UNITED STATES NAVY. The Naval Act of 1921-22, carries a total appropriation of \$433,279,574, which is about 140,000,000 less than the estimates. No new construction is authorized but the carrying out of the 1916 programme is fully provided for. As may be seen in the table opposite, there were building for the navy on Nov. 1, 1920, 6 battleships of 43,200 tons, 4 battleships of 32,600 tons, 1 battleship of 32,300 tons, 6 battle cruisers of 43,500 tons, 10 scout cruisers of 7500 tons, 10 miscellaneous auxiliary vessels, 45 destroyers of 1215 tons, 47 submarines, 2 sea-going tugs. The Navy Department, in pursuance of a recommendation of the General Board of the Navy, had recommended the authorization of 2 battleships, 1 battle cruiser, 10 scout cruisers, 5 flotilla leaders, 6 submarines, 2 airplane carriers, 1 destroyer tender, 1 submarine tender, and \$27,000,000 for aircraft construction, including experimental development. It has been stated that the battleships and battle cruiser will be new types and carry 18-inch guns. The others were vessels intended to fill deficiencies in the fleet. The scout cruisers were to have been of 10,000 tons and to have a speed of 32 knots; the flotilla leaders, 2200 tons, 37 knots; the airplane carriers, 35,000 tons, 32 knots. The foregoing was refused by Congress, but may be granted next year.

After July 1, 1920, the allowance of regular and temporary officers of the navy was 8044 for 137,485 enlisted men. At this time wages and employment in civil life were at the extreme peak. The result was a vast deficiency in enlistments. The total strength of enlisted personnel on April 1 was 105,400—a shortage of 32,000, or 30 per cent. Since July 1, wages have been tending downwards, and the number of men out of employment has greatly increased; owing to these facts, the number of applications for enlistment is steadily growing and if the present business conditions persist there is likely to be plenty of applicants for enlistment in the near future. The organization of the new naval reserve will undoubtedly differ from the existing arrangements which are partly due to temporary legislation and presidential orders and partly

to legislation outdating our entry into the war. Much attention will doubtless be paid to the question of the Reserve in the immediate future. With such a war to draw lessons from it seems reasonable to think that plans for a satisfactory Reserve can be drawn if a "satisfactory Reserve" is practicable.

The most serious defect of the navy is its backwardness in aviation. While Congress refused to grant the full sum asked for, considerable improvement can be made with the means available. As the torpedo plane is approaching a satisfactory stage of development, as bombing planes without any one on board have been steered and operated by radio, and as very great improvements are being made in the design of planes and of airships, keeping up with the times is necessary even if expensive.

VESSELS BUILDING FOR UNITED STATES
NAVY: PER CENT COMPLETED
NOV. 1, 1920

Type and name	Displacement (tons)	Per cent compl.
Battleships:		
California	32,300	94.5
Colorado	32,600	61.3
Maryland	32,600	84.0
Washington	32,600	52.7
West Virginia	32,600	85.5
South Dakota	43,200	16.2
Indiana	43,200	12.8
Montana	43,200	13.2
North Carolina	43,200	17.4
Iowa	43,200	9.4
Massachusetts	43,200	...
Battle cruisers:		
Lexington	43,500	8.2
Constellation	43,500	2.2
Saratoga	43,500	5.8
Ranger	43,500	8.0
Constitution	43,500	1.2
United States	43,500	1.2
Scout cruisers:		
Omaha	7,500	78.1
Milwaukee	7,500	8.0
Cincinnati	7,500	45.8
Raleigh	7,500	23.0
Detroit	7,500	21.4
Richmond	7,500	55.0
Concord	7,500	54.0
Trenton	7,500	32.0
Marblehead	7,500	81.0
Memphis	7,500	24.0
Miscellaneous:		
Pecos (fuel ship)	14,800	42.5
Gunboat No. 22	1,575	37.1
Relief (hospital ship)	9,800	99.0
Nitro (ammunition ship)	10,600	99.4
Medusa (repair ship)	10,000	42.7
Dobbin (destroyer tender)	10,600	36.5
Whitney (do)	10,600	5.0
Holland (submarine tender)	!	7.5
Wright (aircraft tender)	!	65.0

There were in addition to these vessels, under various stages of construction, 45 destroyers, 47 submarines, and 2 sea-going tugs.

Also, authorized, but not yet under construction or contract, 1 transport, 12 destroyers, and 7 submarines.

NAVIES. See NAVAL PROGRESS.

NAVY. See NAVAL PROGRESS.

NEBRASKA. POPULATION. According to the preliminary report of the census of 1920, there were 1,296,372 residents in the State, Jan. 1, 1920, as compared with 1,192,214 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 126,309, a falling off of 2.8 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture covering 1919 and 1920:

Crop	Year	Acreage	Produce, Bu.	Value
Corn	1920	7,560,000	255,528,000	\$104,766,000
	1919	7,030,000	184,186,000	224,707,000
Oats	1920	2,400,000	83,040,000	80,725,000
	1919	2,133,000	69,962,000	45,475,000
Barley	1920	256,000	7,424,000	3,712,000
	1919	217,000	5,577,000	5,577,000
Wheat	1920	3,593,000	60,480,000	79,229,000
	1919	4,884,000	60,675,000	122,564,000
Rye	1920	264,000	3,722,000	8,834,000
	1919	408,000	6,650,000	7,648,000
Hay	1920	3,934,000	6,570,000	62,908,000
	1919	4,540,000	7,125,000	109,924,000
Potatoes ..	1920	85,000	8,415,000	10,028,000
	1921	104,000	5,720,000	10,868,000

* Tons.

MANUFACTURES. Preliminary figures published by the United States Bureau of the Census showed a consistent increase at the census of 1919, as compared with that for 1914. In the order of their importance from a percentage standpoint, the increases for the several items ranked as follows: Cost of materials, 175.3 per cent; wages, 172.7 per cent; value of products, 168.4 per cent; value added by manufacture, 142.9 per cent; salaries, 121.2 per cent; capital, 102.7 per cent; salaried employees, 58.6 per cent; wage earners, 45.2 per cent; primary horsepower, 39.5 per cent; proprietors and firm members, 18 per cent; and number of establishments, 15.7 per cent. The capital invested, as reported in 1919, showed a gain of \$124,249,000, or 102.7 per cent, over that in 1914. The average capital per establishment was approximately \$85,000 in 1919 and \$49,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$305,235,000 or 175.3 per cent. The average cost of materials per establishment in 1919 was approximately \$166,000, and in 1914 \$70,000. The value of products in 1919 showed an increase over that in 1914 of \$373,116,000, or 168.4 per cent. The average per establishment in 1919 was approximately \$206,000 and in 1914 \$89,000. The value added by manufacture in 1919 showed an increase over that in 1914 of \$67,881,000, or 142.9 per cent. The value added by manufacture in 1919 formed 19.4 per cent of the total value of products and in 1914, 21.4 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 3,560, or 58.6 per cent, while the average number of wage earners increased 11,377, or 45.2 per cent. A comparative summary for the State for 1914 and 1919 follows:

	1919	Census— 1914	Per cent. of increase, 1914-1919
Number of establishments	2,884	2,492	15.7
Persons engaged in manufactures	49,076	33,695	45.6
Proprietors and firm members	2,916	2,472	18.0
Salaried employees	9,639	6,079	58.6
Wage earners (average number)	36,521	25,144	45.2
Primary horsepower	125,814	90,192	39.5
Capital	\$245,257,000	\$121,008,000	102.7
Services	61,813,000	24,011,000	157.4
Salaries	15,746,000	7,118,000	121.2

	Census—		Per cent. of increase, 1914-1919
	1919	1914	
Wages	46,087,000	18,893,000	172.7
Materials	479,849,000	174,114,000	175.3
Value of products	594,732,000	221,616,000	168.4
Value added by manufacture (value of products less cost of materials)	115,883,000	47,502,000	142.9

CONSTITUTIONAL CONVENTION. The Nebraska constitutional convention was in session at Lincoln from Dec. 2, 1919 for seventy-four days and adopted forty-one amendments which were to be voted upon at a special election, September 21. The main features of these amendments were as follows: Authorization of the legislature to allow verdicts in civil cases to be rendered by five-sixths of the jury; authorization of the legislature to regulate the rights of aliens in respect to property; requirement that the English language be the medium of teaching in all common schools; reduction of the number of petitioners required for the initiative and referendum; creation of new executive offices only by a two-third vote of both houses of the legislature; appointment of heads of executive departments by the governor with the consent of a majority of both houses; a complete itemized budget of the administration to be presented by the governor which could be increased only by a three-fifths vote of the legislature; concurrence of five out of seven judges of the supreme court required for declaring a law passed by the legislature to be unconstitutional; no appropriations to be made to educational institutions not owned and controlled exclusively by the State.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 247,498; Cox (Democrat), 119,608; Debs (Socialist), 9600; Watkins (Prohibitionist), 5947; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 158,827; Hughes (Republican), 117,771; Socialist, 7141; Prohibitionist, 2952. The vote for governor was: McKelvie (Republican), 153,763; Morehead (Democrat), 130,433.

NEBRASKA, UNIVERSITY OF. A co-educational State institution of the higher learning at Lincoln, Nebraska, founded in 1869. The enrollment for the fall of 1920 was 4453. There were 1096 students enrolled in the summer school. The faculty had 275 members with five additions for the year. There were 147,500 volumes in the library and 900 periodicals. The productive funds amounted to \$896,989 and the total income came to \$2,446,710. The following buildings were completed, erected or purchased during the 25th biennium, which closed November 30. On the City Campus: Social Sciences Hall (\$300,000); Teachers College building (\$170,000); Ellen Smith Hall (\$23,000); Chancellor's residence (\$5900); Student houses or dormitories (7) (\$26,350). Farm Campus: Agricultural Engineering building (\$195,000); and Animal Pathology and Hygiene building (\$133,000). Medical College Campus at Omaha: New Laboratory building (\$176,000); Nurses' Home (\$12,000); and Steam plant (\$77,900). Irrigation School Campus: Irrigation School building (\$15,000). Chancellor, Samuel Avery.

NECROLOGY. The following list contains the names of notable persons who died in 1920. Articles will be found in the YEAR BOOK in their proper alphabetical order on those whose names are mentioned below without other text.

Abney, Sir William de Wiveleslie.
Adair, Charles Henry. Died March 9. He was born July 2, 1851, entered the royal navy in 1864 and had risen to the rank of captain in 1893; served at Suakim in 1884 and won the Egyptian medal and star; and was retired with the rank of admiral in 1913.
Adam, Paul.
Adams, Jewett, W. Former governor of Nevada, died at Berkeley, Cal., June 18.
Adams, William Forbes.
Adcock, Sir Hugh. British diplomat, died April 13. He was born in London in 1847; practiced medicine, 1872-88, after which he was chief physician to the Persian prince Mouzaffer-ed-Din, who came to the throne in 1897.
Abearn, John F.
Albrecht, Duke Johann. Former duke of Mecklenburg, died at Mecklenburg February 15. He was born in 1857.
Aldridge, Rev. John Mullings. British ecclesiastic, died March 18; educated at Trinity College, Dublin, and ordained in 1870; held various charges in Ireland and was dean of Clonfert from 1907 to the time of his death.
Alexander, Charles McCallon.
Alexander, (King of Greece).
Alfonso, Prince. Duke of Oporto, died February 21. He was born in 1865.
Allen, Frederick Sturges.
Amette, Leon Adolphe.
Anderson, Sir Francis James. British brigadier-general, died March 6. He was educated at Woolwich and served as engineer in the Straits Settlements and also as assistant at the war office. In 1917 he was appointed chairman of the Army Sanitary Committee and attache to the General Staff.
Andrews, William Loring.
Argles, George Marsham. British clergyman, died February 22. He was born in 1841, educated at Oxford, and became canon of York in 1888.
Armagh, John Baptist Crozier.
Atkinson, Wilmer.
Ayala, General R. Venezuelan official, died in New York City, August 30. He was born in 1847 and was at one time vice-president of Venezuela.
Ayscough, Thomas. British clergyman, died April 18. He was born September 11, 1830, educated at Rugby and Cambridge and was vicar of Tenbury, 1860-92, and rector of Cradley, 1892 to 1917. At the time of his death he was prebendary of Hereford.
Babbie, Sir William.
Bacon, Alexander Samuel.
Baffiere, Jean. French sculptor, died April 19. He was born in 1851.
Bailey, Clarence Mitchell.
Baker, Horace.
Baker, James.
Baker, John Guilbert.
Bankhead, John Hollis.
Barber, Ohio, Columbus.
Barclay, James. Canadian clergyman, died May 18. He was born at Paisley, England, June 19, 1844, and educated at Glasgow University. From 1883 to 1910 he was minister of St. Paul's Church at Montreal, Quebec.
Barrows, H. P. Agricultural educator, died at San Francisco, Cal., May 3. He was professor of agricultural education at the Oregon Agricultural College and State superintendent of agricultural education. Shortly before his death he resigned in order to become an agent for agricultural education under the government.
Barry, Ralph Brereton. British jurist, died March 10. He was born June 7, 1856 and was called to the Irish bar in 1880. He became professor of law in Queens College, Cork, 1884. At the time of his death he was county court judge of the counties of Kildare, Carlow, Wicklow and Wexford.
Batholomew, John George.
Bartlett, Homer Newton.
Barton, Sir Edmund. Former prime minister of Australia, died at Sydney, New South Wales, January 4. He was born in New South Wales, January 18, 1849. He was prime minister in the first cabinet under the Commonwealth Government.
Battershall, Walton Wesley.
Baxter, Wynne. British official, died at the end of September. For thirty-three years he was coroner for

East London and the Tower of London. He was born in Lewes in 1844 and as coroner held the inquest in a number of celebrated cases, including those of the victims of Jack the Ripper, and of various Russian anarchists.

Beard, Adelia Belle.
Beavan, Thomas Daniel.
Beccarini, O. Italian botanist, died October 25. He was the director of the botanic gardens in Florence, Italy.

Benedict, Elias Cornelius.
Benson, Sir Ralph Sillery.
Bertolini, P. Italian statesman, died at Rome November 28.

Beasborough, Edward Ponsody, Earl of. British peer, died at Birmingham, England, December 1. He was born March 1, 1851 and was secretary to the Speaker of the House of Commons, 1884-95 and secretary to the Caledonian Canal Commissioners, 1886-99.

Besse, Dom.
Biberstein, Baron von. Former German foreign minister, death at Freiburg reported November 14.

Binns, Percy. South African official, died January 8. He practiced law for many years in Natal and served as resident chief magistrate at Durban.

Bird, Charles.
Bissell, George Edward.
Bissolati, Signor.
Blair, Henry William.
Blanc, Edmond.

Blashfield, Albert Dodd. Illustrator, died at Brooklyn, N. Y., February 8. He was born in New York City in 1860. During many years he was known as an illustrator for the periodicals.

Bliss, Howard Sweetser.
Bloodgood, Robert. See Painting and Sculpture.
Rodio, Luigi. Italian economist and statistician, died at Rome, November 2. He was born at Milan in 1840: was professor of political economy at Leghorn and Milan and professor of commercial geography at the Venice Commercial School; an associate of M. Levasseur in studies relating to population and area of countries; president of the International Statistical Institute after 1909; and chairman of the Commission on Statistics which sat in Paris in October, 1920, to advise a policy in the League of Nations. He was the author of important statistical works.

Bogart, John C.
Bogert, James John.
Boggio, Emile. See Painting and Sculpture.
Bonney, Archbishop. French prelate, died in Paris April 20. He was born in 1836 and was Archbishop of Aix.

Bottinger, H. von. Chemist, died June 22. He was born in 1849.

Bouchier, Thomas David.
Boury, Eugene Aurbourg de
Rowden, Henry George.
Brad, Cyrus Townsend.
Bradley, Thomas W.
Braganza, Dom Luiz de, Prince. Grandson of the Emperor Dom Pedro II of Brazil, died at Cannes. He was the son of the Count d'Eu and the Princess Isabelle of Brazil and was a writer of some note.

Brandt, H. C. G.
Brashear, John Alfred.
Breck, George William.
Breckenridge, Madeline McDowell.
Brex, Twells.

Bright, James Franck.
Briosi, G. Italian botanist, died May 4, 1920. He was well-known for his work in plant pathology.

Brittain, Carlo Bonaparte.
Brockway, Zebulon Reed.
Brodhead, J. Davis.

Brooker, Clarence Ehnie. Chemist, died May 9. He had been recently engaged in important chemical experiments with hydrogen chloride in collaboration with Dr. W. D. Harkins at the University of Chicago and had been appointed to the Swift fellowship in chemistry at that institution.

Broughton, Rhoda.
Brousseau, Louis Maurice.
Brown, Frank.
Browne, Charles Francis.
Browning, William J.

Bruce, Andrew McRae. British-Indian soldier, died April 6. He was born January 5, 1842 and joined the Indian army in 1860. He served in a large number of campaigns and frontier expeditions, being often mentioned in despatches and winning several medals and other honors.

Bruch, Max.
Brumidi, Lawrence. See Painting and Sculpture.
Brush, Daniel Harmon.
Buckley, James Monroe.
Bullen, Arthur Henry.

Burch, Charles Sumner.
Burdett, Sir Henry.
Burdick, Francis Marion.
Burne-Jones, Lady Georgiana. The wife of Burne-Jones, the painter, died in London, February 2. She was the daughter of a Wesleyan minister, the Rev. G. B. Macdonald. After her husband's death she lived at Rottingdean, where she wrote the memoirs of Burne-Jones published in 1904.

Burrows, Royal Montagu.
Bury, William.
Butchli, Otto. German zoologist, died in February. He was born in 1848 and was distinguished for his contributions to zoology, especially in the department of cytology. He was a professor at the university at Heidelberg.

Buttz, Henry Anson.
Byran, Oliver Doud.
Callaghan, Sir George Astley.
Campbell, A. H. Philanthropist, died in New York City, October 4. He was the founder and superintendent of the Home for Incurables at Brooklyn, N. Y. He was born in 1836.

Canfield, H. M. Archaeologist, died at Southbury, Conn., January 6. He was born in 1841.
Case, Olifford Philip.
Casey, Mrs. M. C. M. Registrar-general of the Daughters of the Revolution, died in New York City July 22. She was born in 1837.

Cassidy, Joseph.
Castle, Egerton.
Castro, Vincent. Bishop of Santander, Spain, died September 20. He was born in 1841.

Cavia, Mariano de. See Spanish Literature.
Celoria, Giovanni. Italian astronomer, died August 17. He was a university professor and the director of the observatory di Brera at Milan.

Chadwick, O. W. Former Brooklyn official, died October 24. He was at one time Commissioner of Water Supply in Brooklyn. He was born in 1847.

Chafin, Eugene Wilder.
Chalmers, Albert John.
Chamberlayne, Catharine Jane. Educator, died at Boston, Mass., April 16. She graduated at the Elmira College for Women in 1865 and studied in France. For many years she taught in schools and academies and in 1892 she founded the Miss Chamberlayne's School for Girls, of which she remained principal.

Chambers, Julius.
Chamier, George Daniel. British brigadier-general, died May 3. He was born Sept. 24, 1860; educated at Woolwich and entered the royal artillery, serving as artillery commander during the defense of Kimberley in the Boer War, 1899-1902, and winning medals and frequent mention in despatches. He was inspector of the royal garrison artillery and of the coast defenses in India.

Chapin, Anna Alice.
Chapman, Robert Hollister. Topographical engineer, died in 1920. He was born in New Haven, Conn., in 1868. During the war he was a major in the Engineers Reserve Corps. For many years he was topographical engineer of the United States Geographical Survey.

Chase, Walter B. Physician, died at Brooklyn, N. Y., November 15. He was known as one of the early workers in the field of radium therapy. He was born in 1842.

Chickering, F. W. Manufacturer, died at Chicago, Ill., October 14. He was born in 1865 and was well-known as a manufacturer of pianos.

Chiassi, Marquis della A. Italian nobleman, died at Rome, Italy, December 10. He was born in 1853 and was the brother of Pope Benedict.

Choate, William Gardner. Judge, died at Wallingford, Conn., November 14. He was born at Salem, Mass., August 30, 1830, and graduated at Harvard in 1852. After 1856 he practiced in New York City and was a member of the law firm of Choate, Larocque, and Mitchell. He was judge of the southern district of New York, 1878-81, and one of the early presidents of the Harvard Club.

Choiniski, Theodore Geske. Polish author, died at Warsaw, Poland, April 18.

Churchill, William.
Cilley, Jonathan Prince.
Claassen, Arthur.
Claire, Henry Lewis.
Clarke, Thomas Shields.
Clay, Cecil.
Cleghorn, James.
Clery, J. A.

Cloete, Hendrik. South African lawyer, died May 18. He was born in Cape Colony, Aug. 10, 1851 and became advocate to the supreme court bar of Cape Colony in 1878. He served in the war of 1880-81 and was British agent in the South African republic after the Jameson raid.

Cohn, Abraham. Jewish prelate, died May 5. He was Grand Rabbi at Melilla in Spanish Morocco.

Cole, Alfred Clayton. Governor of the Bank of England after 1911, died June 5. He was born in London, Dec. 17, 1854, and educated at Eton, and at Trinity College, Cambridge. He was admitted to the bar in 1880.

Cole, Charles K. Mountain climber, died at Brooklyn, N. Y., February 27. He was founder of the Rocky Mountain Club.

Coleridge, Ernest Hartley.

Collier, Edward Augustus. Clergyman, died at Kinderhook, N. Y., Dec. 8. From 1864 to 1907 he was pastor of the Protestant Dutch Church in that town. He was born in New York City in 1835; graduated at New York University in 1857; studied at the Princeton Theological Seminary; and was ordained in 1860.

Colman, Samuel.

Combe, Boyce Albert. British soldier, died June 8. He was born Aug. 28, 1847, entered the army in 1860, and served in the Abyssinian campaign and in the Afghan war of 1878-80, winning medals and frequent mention in despatches. From 1888 to 1894 he commanded the Sind district in Bombay and from 1899 to 1903 the Rawal Pindi district. In 1904 he was made a colonel in the 14th Hussars.

Cooke, Marjorie Benton.

Coolidge, Thomas Jefferson.

Cooper, Emma Lampert.

Corbet, Eustace Kynaston.

Corbett, Hunter.

Cotman, Frederic George. British painter, died July 16. He was born Aug. 14, 1850 and educated at Ipswich. In 1873 he received the gold medal for historical painting. He was known especially for his water colors.

Courtney, C. E. Oarsman, died at Ithaca, N. Y., July 17. He was born in 1849.

Courtney, John Mortimer. Canadian official, died at Ottawa, October 8. He was born at Penzance, England, July 22, 1838 and went into the banking business in Canada, where he served on several important commissions. He became Deputy Minister of Finance and Receiver-General and Secretary of the Treasury Board; and he was president of the Victorian Order of Nurses in Canada.

Cox, Francis Albert.

Cox, S. Herbert. British authority on mining, died April 11. He was professor of mining in the Royal School of Mines at South Kensington, London, and at the time of his death was emeritus professor.

Cosens-Hardy, Herbert (Baron Letheringsett). British jurist, died June 18. He was born Nov. 22, 1838, and educated at University College, London. From 1899 to 1901 he was judge of the chancery division of the High Court of Justice and from 1901 to 1907 Lord Justice of Appeal. In 1907 he was made Master of the Rolls.

Crane, W. Murray.

Creak, Ettrick William. British authority on magnetism, died April 8. He was born in 1835. He was known for his work on the compass and in magnetism and was a fellow of the Royal Society.

Crewdson, George. British clergyman, died Feb. 18. At the time of his death he was Canon of Carlisle. He was born at Kendal, England, Aug. 18, 1840, and educated at Trinity College, Cambridge. From 1893 to 1911 he was vicar of St. Mary's, Windermere.

Croker, Mrs. B. M.

Crosby, Frederick Van S.

Culme-Seymour, Sir Michael.

Cumberland, Charles Edward. British soldier, died in July. He was born in 1880 and educated in Woolwich. He served in the Crimean war and in Indian mutiny, winning medals in both.

Cummings, Charles H. Railway official, died at Meredith, N. H., January 20. He was born in 1842. He was formerly president of the Chesapeake and Ohio railroad.

Cunliffe, Walter (Lord Cunliffe).

Cunningham, Sir Henry Stewart.

Currie, Ryves Alexander Mark. British soldier, died March 30. He was born June 18, 1875, and educated at Wellington College. He served on the northwest frontier of India in 1897 and during the late war (1914-17) he won distinguished honors and temporarily held the rank of brigadier-general.

Curtis, H. Holbrook.

Curtis, M. B.

Dalton, Sir Cornelius.

Daly, Sir Malachy Bowes. Canadian civil official, died April 26. He was born in Quebec Feb. 6, 1836, and was a member of parliament from Halifax 1878-86. In 1890-1900 he was lieutenant-governor of the province of Nova Scotia.

Danckelman, Alexander Freiherr von.

Daner, William Franklin.

Darcq, M. Former inspector-general of posts and telegraphs in France, died in the Spring. He was distinguished as an engineer and as an administrator.

Davis, Julien.

Davis, John Moore Kelso.

Day, William Plumber.

Debaisieux, Dr. T. Belgian surgeon, died in the Summer. He was formerly professor of surgery at the university of Louvain and also held the offices of president of the Belgian Academy of Medicine and the Belgian Surgical Association.

Debove, Maurice.

De Candolle, A. Swiss botanist, died May 29.

Dehmel, Richard. German poet, died at Berlin Feb. 11. He was born in 1862; wrote *Erlösungen* (1891); *Aber die Liebe* (1893); *Der Mithras* (1895); *Weib und Welt* (1897); *Lucifer* (1899); *Füßstapfen* (1900); *Verwandlungen der Venus* (8d ed., 1907); *Michael Michael* (1911); was especially known for his lyrics.

Deis, Carl Otto. Music composer, died in New York City, March 20. He was born in 1845.

De Koven, Reginald.

Delano, Eugene. Banker, died April 2. He graduated at Williams College in 1860 and entered an important firm of bankers in New York City, where he was prominent in banking circles for many years. He was a trustee of Williams College.

De Lisle, Edwin.

Dempey, Sir Alexander. British physician, died July 18. He was born in Ireland Feb. 15, 1852 and graduated in medicine at Dublin. He was a lecturer on gynecology at Queens University, Belfast, a member of the governing body of University College, Dublin, and held other important positions.

Deslys, Gaby. French dancer and actress, died in Paris, February 11.

Des Planches, Baron Edmondo.

Deuel, Joseph Merritt.

De Wend-Fenton, W. F.

Dexter, Franklin Bowditch.

Dick, Sir James Nicholas. British surgeon and soldier, died July 12. He was born in 1832 and served in the Crimean and Abyssinian wars and from 1888 to 1898 was director-general of the medical department of the navy.

Diggle, John William.

Dixon, Sir Alfred Herbert.

Dockrell, Benjamin Morgan.

Dodge, Horace E.

Dodge, John F.

Don, William Gerard.

Doncaster, Leonard.

Donnelly, Nicholas. Bishop of Dublin, died March 28. He was born Nov. 23, 1837, and educated at St. Vincent's College in Ireland and at the Irish College at Rome. In 1883 he was made Bishop of Canea and Vicar-General of Dublin. After 1904 he served as parish priest in Dublin.

Doolittle, Eric. Astronomer, died Sept. 21. He was professor of astronomy at the University of Pennsylvania. He was born at Ontario, Ind., July 26, 1869 and graduated in civil engineering at Lehigh University. He wrote a number of treatises on the measurement of double stars. After 1912 he was director of the Flower Observatory at the University of Pennsylvania.

Dougherty, J. Hampden.

Douglas, Charles Nole. Author, died at Brooklyn on Nov. 13. For thirty years he had been bedridden, but had continued his profession as a writer. He was born in Kent, England in 1864 and came to the United States in 1888.

Douglas, Percy Sholto. Marquis of Queensberry, died at Johannesburg, South Africa, Aug. 1. He was born in 1868 and was the ninth to hold the title.

Downham, William Hayes Fischer, Baron.

Draper, Herbert James.

Drouibi, Pasha. Syrian prime minister, died at Haifa, Syria, August 20.

Dubois, James T.

Duell, Charles Holland.

Dugro, P. Henry.

Duncan, Edmondstone.

Durand, Sir Edward Law. British Indian official, died July 1. He was born June 5, 1845 and entered the army in 1865. He was commissioner on the Afghan boundary, 1884-6, and Resident in Nepal, 1888. He wrote *Cyprus*, *the Great King* (1906), and *Rifle, Red, and Spear in the East*.

Durham, Bishop of.

Dutcher, William. Ornithologist, died at Chevy Chase, Md., July 1. He was born in 1850 and was formerly head of the Audubon Society.

Duvall, William Penn.

Duveen, Louis J. Art dealer, died in London, England, March 4.

Dyer, Isadore.

Eckman, George Peck.

Eddy, Arthur Jerome.
 Eden, William Rushbrooke. British soldier, died July 11. He was born at Bath, Oct. 11, 1878, educated at Woolwich and entered the royal artillery. He served in the Boer war, where he was mentioned in despatches and won the Queen's medal and during his services in the late war (1914-1917), rose to the brevet rank of brigadier-general.
 Edgerton, John Warren. Professor of law, died at New Haven, Conn., July 8. He was born Feb. 20, 1875, graduated at Trinity College, Connecticut, 1894 and after practicing law at New Haven became the secretary of the law faculty at Yale. After 1911 he was professor of mercantile law.
 Edinburgh, Duchess of. Dowager Duchess of Saxe-Coburg and Gotha, died at Zurich, Switzerland, Oct. 25. As the daughter of Czar Alexander II, she was the Russian Grand Duchess, Maria Alexandrovna. She was born in 1853 and married Prince Alfred, Duke of Edinburgh, who died in 1900. Four daughters survived her, one of whom was queen of Rumania.
 Edwards, Sir Owen Morgan.
 Egerton, Alan de Tatton, Baron of Tatton. British engineer, died at Knutsford, England, Sept. 9. He was born March 9, 1845; was for ten years representative on the Metropolitan Board of Works; first president of the Cold Storage Association.
 Eisig, Hugo. Zoologist, died in Switzerland, Feb. 10. He was born in 1847 and is known for his work in co-operation with Anton Dohrn in the founding and management of the Naples Zoological Station.
 Ekengren, William August F.
 Elgar, Lady. Wife of the composer, Sir Edward Elgar, died in April. She was the daughter of Major-General Sir Henry Gee Roberts and married Mr. Elgar in 1889. She aided him in his work as a composer and he owed to her the words of a large number of his compositions. She accompanied him on his concert tours.
 Elitbank, Lord Murray of. British official, formerly Liberal whip in Parliament, died Sept. 13. He was born in 1870; was private secretary for several years in the Colonial Office; member of Parliament after 1900; held office under the Liberal government, 1905-12, and was its chief whip. His name was connected with the Marconi inquiry before the late war, but a committee of the House of Lords found nothing in the charges that involved his personal honor.
 Ellis, Alston.
 Ellis, Arthur.
 Elson, Louis Charles.
 Elton, Sir Edmund Harry. Originator and designer of Eltonware pottery, died July 17. He was born May 3, 1846, and educated at Cambridge. His work in pottery won him many gold medals in international and other exhibitions.
 Elwell, Joseph B. Sportsman and authority on whist, found fatally shot in his home in New York City, June 11; case long discussed in the local press on account of the mystery attached to it and certain singularities in the investigation.
 Emerick, Charles Franklin.
 Endicott, H. B. Shoe manufacturer, died at Boston, Mass., Feb. 12. He was born in 1854 and after building up a large business in Boston, established a branch at Binghamton, N. Y., known as the Endicott-Johnson Company, which introduced with great success many features in the interest of the employees. The town of Endicott was named after him.
 Errington, Sir George.
 Essad Pasha.
 Eugenie, Empress.
 Evans, Britton Duroc. Physician, died at Morris Plains, N. J., January 14. His speciality was the treatment of the insane. He was born Oct. 1, 1858.
 Ewing, Sir Thomas.
 Faber, Edmund Beckett.
 Fahey, Jerome. British Roman Catholic prelate, died March 12. He was vicar-general of Galway in Ireland. He was born in 1843.
 Fairholme, William Ernest.
 Falconbridge, Sir Glenholme.
 Farrer, Reginald.
 Fay, Edwin Whitfield.
 Fisher, George Egbert.
 Fisher, John Arbuthnot, Lord.
 Fitzgerald, David. British jurist, died March 5. He was born Jan. 14, 1847, and educated at Cambridge, and was for a long time county judge in Ireland.
 Fitzmaurice, E. See Roman Catholics.
 Fitzpatrick, Sir Dennis.
 Fleming, Rufus. American counsel at Edinburgh, died April 3.
 Florio, Caryl.
 Flournoy, T. See Psychological Research.
 Fogg, Peter Parry. South African prelate, died March 22. He was born in Flintshire, England, in

1882; ordained in 1860; and after officiating in English parishes, became a member of the first council of the University of the Cape of Good Hope. He was made an archdeacon in 1871 and a vicar-general in 1899.
 Fragerolle, Georges. French writer, death reported in March. He belonged to the group of original artists and enthusiasts who founded the *Black Cat* along with R. Sallis. He was a poet and composer, his chief compositions being the music to which was set H. Riviere's *March to the Star* and A. Vignola's *Sphinx*.
 Franks, Sir Kendal.
 Fraser, Sir James.
 Fraser, Sir Thomas Richard.
 French, Percy.
 Frey, Adolf. See German Literature.
 Friedlander, Israel.
 Fry, Jacob.
 Fryer, Sir Charles.
 Fûrbringer, Max. German comparative anatomist, died in the Summer. He was born in 1846 and after 1901 was professor at Heidelberg. He wrote valuable treatises on the anatomical structure of the vertebrates.
 Gadsden, Edward Holroyd. British official, died February 17. He was born Aug. 21, 1859, and joined the Madras police forces in 1879. From 1893 to 1914 he was superintendent of the Central jail at Coimbatore. After 1914 he was inspector-general of prisons at Madras.
 Gaines, William P. Editor, died March 18. He was born in 1862 and was owner and editor of the *Austin (Texas) Statesman*.
 Galey, James.
 Galloway, Randolph Henry Stewart, Earl of. British peer and great land-owner, died February 7. He was born Oct. 14, 1836, and served with distinction in the Crimean war and the Indian mutiny.
 Galvan, Luis.
 Ganghofer, Ludwig.
 Garland, Marion M.
 Garner, Richard Lynch. American naturalist, died January 22. He was born Feb. 19, 1848, and was well-known for researches in Africa on apes and monkeys, especially for experiments in respect to the nature of their speech.
 Garrigou, Felix.
 Garthe, Louis.
 Garvey, Eugene.
 Garvice, James.
 Gary, James Albert.
 Gasstovitt, Wenceslas.
 Gates, Eller M. Huntington.
 Gerster-Gardini, Etelna.
 Gheen, Edward Hickman.
 Gibson, Margaret Dunlap.
 Giddens, George.
 Gildea, Sir James.
 Gill, John, Jr. Former Congressman, died at Steubenville, Ohio, May 22. He was born in 1846.
 Gilray, Thomas. New Zealand educator, died February 8. He was born in Scotland in 1851, and studied at the University of Edinburgh, and in Germany. After 1889 he was professor of English and dean in Otago University.
 Gittings, Joseph H.
 Giustiniani, Philip. See Roman Catholics.
 Glenconner, Edward P. T.
 Glenn, Robert Brodnax.
 Glover, Sir John. British ship-broker, died March 24. He was born Sept. 6, 1829 and served as chairman of Lloyd's registry and of the Mercantile Steamship Company. He was the senior partner in Glover Brothers.
 Goddard, Arthur. British author and editor, died in August. He was born in 1858 and wrote dramatic criticisms after 1844. He was one of the founders and afterwards editor of *Society*.
 Goff, Nathan.
 Goldney, Sir John Tankerville. British jurist, died April 11. He was born in 1846 and during many years held high judicial positions in the British West Indies, being chief justice of Trinidad, 1892-1900.
 Goldschmidt, Henriette. German feminist, died February 16, at Berlin. She was one of the leaders of the woman's movement in Germany.
 Goodell, Thomas Dwight.
 Goodrich, Alfred John.
 Gordon, Clarence.
 Gorgas, William Crawford.
 Gough, Hugh S. British major-general, died March 30. He was born Feb. 4, 1848, and served in the Afghan war, Egyptian war, and Bechuanaland, with distinction.
 Gow, Andrew Carrick.
 Grabfelder, Samuel. German-American distiller and philanthropist, died April 17. He was born in Bavaria Sept. 2, 1844.

Granados, Enrique Fernandes. See Spanish Literature.

Grant, Sir James Alexander. Canadian surgeon, died at Ottawa, February 6. He was born in 1831. He was not only among the most distinguished surgeons in Canada, but was known for his work in paleontology.

Grant, Noel.

Greeley, Edwin Seneca.

Green, Charles Edwin. British author, died January 6. He was born in 1866 and educated at Edinburgh University. He published *Green's Encyclopaedia* in 1845 and many other works of reference.

Green, James Monroe.

Greenawalt, Elmer Ellsworth.

Gregory, Stephen Strong.

Griffes, Charles Tomlinson.

Griffith, Sir Samuel Walker.

Grotthuss, Jeannot Emil. See German Literature.

Grove, Sir Coleridge. British soldier, died May 17. He was born at Wandsworth, Sept. 6, 1839. He graduated with honors at Oxford; was secretary to three successive war ministers and served with distinction in Egypt, the Sudan, the Nile and Suakini campaigns.

Groves, Charles Edward.

Grubicy, Vittore. See Painting and Sculpture.

Guecsfeldt, Paul. Professor and explorer, died at Berlin, January 18.

Guiney, Louise Imogen.

Guisasola, Victoriano. See Roman Catholics.

Gulland, John William.

Gunther, Charles Frederick.

Guthrie, Charles John, Lord.

Hale, Sarah J.

Hall, Ernest.

Hall, Henry.

Hall, Josephine. Singer and actress, died December 5.

Hammersley, William. Judge, died September 17. He was born at Hartford, Conn., Sept. 9, 1838; graduated at Trinity College, Conn., and studied at the Harvard Law School. He was judge of the Superior Court of Connecticut, 1893-04, and associate justice of Supreme Court of Errors, 1894-1908.

Hamilton, Henry Blackburne. British soldier, died April 2. He was born in 1841 and after serving in the Dragoon Guards commanded the 14th Hussars; served with distinction in the Afghan campaign, 1880. He published a number of regimental records.

Handfield-Jones, Montagu. British-surgeon, died April 20. He was born May 12, 1855; was a specialist on obstetrics and examiner on that subject in the University of Cambridge and obstetric surgeon of important hospitals in London; contributed extensively to medical journals on the subject of obstetric medicine and surgery.

Hanley, J. Frank.

Hardy, E. J.

Harris, Elijah Paddock.

Harris, Henry T. B.

Harrison, Constance Cary.

Hart-Davies, Thomas. British Indian civil servant and traveler, died January 3. He was educated at Oxford and entered the Indian civil service in 1869, serving in various departments; retired in 1897 and from 1906 to 1910 was member of Parliament; made the voyage around the world eight times and visited nearly every country on the globe. He wrote short stories for the magazines and translated works from Russian.

Hartzler, Henry Burns.

Harvey, L. M. Judge, died June 25. He was born in 1858 and was associate justice of the supreme court of Indiana.

Hawkins, Rush Christopher.

Heckert, Charles Girven.

Heinemann, William.

Hellman, Isaias William, Jr. Jewish-American banker, died May 10. He was born at Los Angeles, Cal., son of the California banker of the same name; was employed in his father's banking institutions; and after 1916 was president of the Union Trust Company at San Francisco, and officer of other important companies.

Hemphill, Alexander Julian.

Hendley, Charles Edward. British brigadier-general, died February 1. He was born Dec. 25, 1863 and served in Burma, the northeast frontier of India, and the Tirah expedition, winning distinguished honors, and was in command of the Ambala brigade during the late war, serving with the Indian expeditionary force in the Dardanelles, 1915.

Hennessy, John Joseph. See Roman Catholics.

Herkless, Rev. Sir John.

Hertzberg, Hans R. R.

Hesberg, Albert. Jewish-American lawyer, died July 25. He was born at Albany, N. Y., Dec. 18, 1856; admitted to the bar in 1877 and practiced at Albany,

of which city he was twice elected recorder, 1888 and 1896, and was corporation counsel, 1883-86. He was president of the Albany and New York County Bar Associations and officer of a number of important civic and philanthropic bodies.

Hewitt, Charles Gordan. Canadian zoologist, died at Ottawa, March 1. He was born in Scotland in 1886 but after 1909 lived in Canada, where he was entomologist and consulting zoologist to the government.

Hewitt, John Haskell.

Hill, Benjamin.

Hillier, Frederick J.

Hirsch, Franz. See German Literature.

Hodler, Ferdinand. See Painting and Sculpture.

Holcomb, Silas Alexander.

Hollier, Samuel. See Painting and Sculpture.

Holmes, Christian R.

Hooker, Warren Brewster.

Hooton, Mott. Brigadier-general, died May 30. He was born in 1832.

Hope, Graham. British authoress, died April 20. She was an organizer and secretary of the Women's Unions and Tariff Reform Association. Among her writings were: *The Triumph of Count Osterman* (1907); *Gage of Red and White* (1904); *Lady of Lytle* (1905); *Amelia* (1907); and *The Honor of X* (1908).

Hoskins, E. R. Anatomist, died January 13. He was assistant-professor of anatomy in the University of Minnesota.

Hoskins, Franklin Evans.

Houghton, Louis Seymour.

Howard, Thomas Benton.

Howells, William Dean.

Hughes, Matthew Simpson.

Hughes, Spencer Leigh. British journalist and member of Parliament, died February 22. He joined the staff of the *Morning Leader* and was on the staff of the *Star* after 1861. He was sent to Parliament in 1910. He wrote *English Character* (1912); and *The Art of Public Speaking* (1913).

Hull, Charles Patrick Amyatt. British soldier, died July 24. He was born June 3, 1865; educated at Trinity College, Cambridge and entered the army in 1887. He served in the South African war, where he was severely wounded, and throughout the late war, in which he rose to the rank of major-general.

Humphrey, Lawrence. British physician, died February 5. He was born in 1856; graduated at Trinity College, Cambridge, with honors; became teacher of pathology at the University of Cambridge in 1884; and was president of the Cambridge Medical Society, 1899-1900. He wrote for many medical journals.

Hunter, G. Sherwood. British painter, died June 13. He was born in Scotland; educated in Edinburgh; traveled widely and painted scenes in European countries and Palestine. He won medals at the Crystal Palace exposition in 1896-8.

Huntington, Alfred Kirby.

Huson, Thomas.

Hutchins, Charles Thomas.

Hyatt, John Wesley.

Hyslop, James Hervey.

Iddings, Joseph Paxson.

Inostranetz, A. A. Russian geologist, died in the Summer. He was professor of geology at the University of Petrograd. He was born in 1843.

Izat, Alexander. British railway builder, died January 2. He was born in 1844 and entered the Indian public works department in 1863 as an engineer. In 1870, after being transferred to the railway branch, he served in many important railway extensions until his retirement in 1904. After 1902 he was a director of the Bengal and Northwestern Railway company.

Izzett Pasha. Governor-general of Smyrna, died January 6.

Jackson, John Brinckerhoff.

Jacob, Edgar.

James, Francis Edward. British water color painter, died August 25.

Jayne, Henry LaBarre.

Jaynes, Allen Brown.

Jennings, Frederic Beach. Lawyer, died May 26. He was born at Bennington Centre, Vt., Aug. 6, 1853; graduated at Williams College in 1872 and in law at Harvard in 1874. In the following year he was admitted to the bar and afterwards became a member of the firm of Stetson, Jennings, and Russell. He was director, general counsel, or member of various important railway, financial, and industrial companies.

Jennings, William Sherman.

Jette, Sir Louis Amable.

Joachim, Prince.

Jocelyn, Stephen Perry.

Johns, Claude H. W.

Johnston, Robert Matteson.

Jolin, Severin. Swedish chemist, died early in the

year. He did much to raise the standard of the Swedish pharmacopoea and shortly before his death was elected president of the Swedish Medical Association. He was professor of chemistry and pharmacology at Stockholm and Upsala.

Jones, Alfred Stowell.

Jones, Evan Rowland.

Jones, J. Levering.

Jones-Parry, John Parry. British naval officer and inventor, died April 18. He invented a non-recoil gun carriage. He was born Oct. 7, 1829, and served during the Crimean war. He retired in 1873.

Jordan, Ernest M. Nerve specialist, died March 15. After 1918 he was a member of the faculty of the Boston University Medical School.

Karageorgevich, Prince Alexander. Former pretender to the Serbian throne, died in Paris, France, Feb. 16.

Kaufmann, Moritz.

Kearns, Thomas Joseph. British army officer, died June 30. After 1907 he was sergeant-at-arms in the City of London. He was born Jan. 6, 1861, and served in the South African war in 1879 and with distinction in the Zulu and Ashantee campaigns. He served in the late war from 1914 to 1916 and was twice mentioned in despatches.

Kellogg, Daniel Fiske.

Kempff, Louis.

Key, Joseph Staunton. Methodist Episcopal bishop, died April 6. He was born at La Grange, Ga., July 18, 1829, and graduated at Emory College in that State in 1848, entering the Methodist ministry in the same year. He was engaged in pastoral work in Georgia until 1886, when he was made bishop.

Kimball, Francis Hatch. See Painting and Sculpture.

Kinch, Edward.

King, Harriet Eleanor Baillie Hamilton. British writer, died May 10. Among her publications may be mentioned *Aspromonte and Other Poems*, *The Disciples*, *Ballads of the North and Other Poems*, *Hours of Passion*, *Letters and Recollections of Mazzini*.

Kinkaid, Thomas Wright.

Klinger, Max.

Knight, Henry Joseph Corbett.

Knorr, Admiral von. Former commander-in-chief of the German fleet, died February 18.

Knudsen, Ivan. Engineer, died at Copenhagen March 27.

Knupfer, Paul.

Koerner, Bernhard E. German military officer, reorganizer of the Chilean Army, died at Berlin, March 26. He was born in 1846.

Kolchak, Admiral.

Koppel-Elfeld, Franz. See German Literature.

Koravic, Karel.

Kronold, Selma.

Kruyer, Abraham.

Lacome, Paul. French musical composer, death announced in December. He was the author of various light operas and musical comedies, including *The Knight of St. John*, *Madam Boniface*, etc.; and a celebrated romance entitled, *La Toussaint*. He also published two works on the founders of opera and opera comique.

Lammasch, Heinrich.

Lampe, Joseph Joachim.

Langeller, Charles French.

Lapworth, Charles. British geologist and physiographer, died March 18. He was born in 1843 and for many years was professor of geology and physiography in the University of Birmingham.

Lascelles, Sir Frank.

Lash, Zebulun Alton.

Lauchheimer, Charles Henry.

Lauder, Charles James.

Lauriat, Charles Emelius. Publisher, died February 12. He was born at Boston, Mass., Jan. 12, 1842 and entered a firm of booksellers in Boston. He afterwards formed the partnership of Estes and Lauriat which was succeeded in 1898 by the Charles E. Lauriat company, of which he was president.

Law, Evander McIver.

Legien, Carl Rudolph.

Lehman, Samuel.

Leman, G. G.

Le Sueur, Daniel.

Levey, Charles Joseph.

Liddell, Adolphus G. O.

Liesegang, Adolf.

Lima, Dr. Wenceslan de. Former prime minister of Portugal, died at Lisbon, January 29.

Lippincott, William Henry.

Lobeck, Charles O. Former Congressman, died January 30. He was born at Andover, Ill., April 6, 1852; after 1892 was in the hardware business and later in real estate and insurance in the city of Omaha. After holding State and city offices, he was member of Congress, 1911-19.

Locke, Robinson.

Lockyer, Sir (Joseph) Norman

Lozano, F. President of the Chilean Senate, died at Santiago, Chile, August 30.

Ludwig, Duke of Bavaria.

Lyall, Sir Charles James.

Lydecker, Charles Edward.

Lyman, Benjamin Smith.

Lyon, Edmund.

Lyon, Leroy Springs.

Lyster, Cecil R. O.

MacAlpine, Sir George Watson.

MacArthur, J. S. British industrial chemist, died March 16. He was known for his work in chemistry and mining, and especially for his part in the discovery of the cyanide process for the extraction of gold and other metals.

MacCurtin, Thomas. Lord Mayor of Cork, murdered in Cork, Ireland, March 20. His house and shop were invaded early in the morning by men carrying rifles and as soon as he made his appearance, he was shot down, dying of his wounds soon afterwards. See Great Britain, History.

Macdonald, Sir Donald Alexander.

MacDonald, Walter.

MacKay, S. Canadian chemist, died at Halifax, Nova Scotia, January 6. He was born in 1864 and educated at Dalhousie University and at Johns-Hopkins. From 1896 until the time of his death he was professor of chemistry at Dalhousie University.

Mackenzie, Kenneth Alexander.

Mackie, Charles H. See Painting and Sculpture.

Mackinnon, Alan.

MacLaurin, Richard Cockburn.

MacLean, Harry Aubreyde.

MacLeod, Angus.

MacLeod, Sir Ezekiel.

MacCloskie, George.

MacMahon, John Eugene.

Macoun, James Melville.

MacSwiney, Terence.

Madeleine, Paul. See Painting and Sculpture.

Madrazo, Raimundo.

Maizon, Charles E.

Mair, William.

Malcolmson, John Henry Porter. British general, died June 30. He was born Oct. 20, 1832, and served for many years in India, including the Indian mutiny and the Afghan campaign.

Mallinger, Mathilde.

Malone, James Thomas.

Mann, William D'Alban.

Marchant, Charles George.

Margules, Max. See Meteorology.

Marquette, Laurent Honore. French sculptor, died April 6. He was born in 1848.

Marshall, William Louis.

Martin, Sir Thomas Carlaw.

Matcham, Frank.

Mathers, Helen.

Mathews, Sir Charles. British barrister, died January 6. After 1908 he was the director of public prosecutions. He was born Oct. 16, 1850; educated at Eton and called to the bar in 1872. He was recorder of Salisbury, 1873-1908.

Maxwell, William Henry.

McCarthy, James P.

McClelland, John Alexander.

McGraw, John Thomas.

McLaughry, Robert Wilson.

McNally, James Clifford.

Meagher, John Luke.

Meltzer, S. J.

Melvin, Henry Alexander.

Mercer, David. British general, died July 1. He was born in London, July 1, 1864. During the late war he was brigadier-general in command of the 1st R. N. brigade of the R. N. Division, 1914-16, and served throughout the operations in Gallipoli, being mentioned twice in despatches.

Merson, Luc-Olivier.

Messel, Rudolph.

Metcalf, Loretus Sutton.

Metcalf, Theodore A. See Roman Catholics.

Mettey, Andre.

Meyerheim, Robert Gustav. British painter, died May 16. He was born in Germany of a family of Berlin artists; settled in England in 1875 and became a member of the Royal Institute in 1898. He worked both in water color and in oil.

Michie, J. Coutts. See Painting and Sculpture.

Mickle, William English.

Miller, Warren.

Milliken, Seth Mellen.

Miranda, Admiral Angel. Former Minister of Marine, Spain, died April 28.

- Moore, Temple.
 Morant, Sir Robert Laurie.
 Mordecai, Alfred.
 Morehouse, James T.
 Moreira, Delphin.
 Morny, Duke de. French nobleman, died in Paris, July 15.
 Morrison, George Ernest.
 Morton, Levi Parsons.
 Moses, Alfred Joseph.
 Mosler, Henry.
 Moss, Frank.
 Mott, Garret Schenk.
 Mudge, Henry U.
 Munro, Robert.
 Murphy, Franklin.
 Murphy, William Martin.
 Murray, Arthur Mordaunt.
 Nail, Louis. French official, formerly keeper of the seals, died in Paris in consequence of an automobile accident, October 28.
 Napier, Treviyan D. W.
 Nasmyth, George.
 Needham, Joseph.
 Neira, General Miguel Riva de. Soldier of Ecuador, died at Guayaquil, Ecuador, March 28.
 Nelson, W. H. de B.
 Netto, Joseph Sebastian. See Roman Catholics.
 Newland, H. Osman.
 Nichols, Charles A. Congressman, died April 25. He was educated in the public schools and was a city clerk in Detroit, Mich., from 1908 to 1912. He was a member of Congress from 1915 to the time of his death. In politics he was a Republican.
 Noble, Harriet I.
 Norris, True Livingston.
 Norton, George W.
 Oakley, P. Davis.
 Obligado, Rafael. See Spanish Literature.
 O'Donovan, William Rudolf.
 Ohl, Josiah Kingsley.
 Olmstead, John Charles.
 O'Neill, James.
 O'Shea, John J. Editor, died March 2. He was born in 1841 and was a well-known figure in Philadelphia journalism.
 O'Shea, Lucius Trant.
 Pain, Arthur Wellesley, Bishop of Gippsland. Australian prelate, died May 14. He was born in London, Aug. 21, 1841; educated at Cambridge; ordained in 1866; and became rector of a parish in New South Wales in 1868. He was made Bishop of Gippsland in 1902.
 Paine, John Hebard.
 Palacios, M. de. Author, Madrid, died October 5. He was born in 1860.
 Palles, Christopher.
 Pape, William F. G. See Painting and Sculpture.
 Parsell, Charles Victor. Educator, died April 16. He was born at Akron, N. Y., Nov. 14, 1851, and studied at Cornell University and at St. Lawrence University. He was president of the Clinton Liberal Institute, 1879-98, and of the Cascadilla School, Ithaca, N. Y., 1898-1915.
 Parsons, Alfred.
 Pascal, Albert. Bishop of Prince Albert, Saskatchewan after 1907, died July 6. He was born at Langue-doc in 1848, and was a missionary to the Indians of the Northwest, 1874-1891.
 Pasolini, Count Desiderio. Italian senator and historian, died January 26.
 Patterson, John Henry.
 Pavlovitch. President provisional national assembly at Belgrade, died April 8.
 Peake, Archibald Henry.
 Peary, Robert Edwin.
 Pecheñard, Mgr. French bishop, died May 27. He was born in 1850.
 Peloubet, Francis Nathan.
 Penfield, Smith Newell.
 Penny, William L. Roman Catholic priest, died in New York City, December 1. He was born at Kingston, N. Y., in 1845; studied at the St. Joseph's Seminary at Troy, N. Y., and was ordained in 1871. He was pastor of the Church of the Annunciation in New York for twenty years.
 Pentecost, George Frederick.
 Penton, Arthur Pole.
 Perabo, Ernst.
 Perez-Galdos, Benito.
 Perkins, George Walbridge.
 Perrin, Bernadotte.
 Perrine, Enoch.
 Parris, George Herbert.
 Pettes, James Horace.
 Pfeffer, Wilhelm.
 Philbin, Eugene.
 Phillips, Francis Clifford.
 Pilander, A. A. L. Swedish admiral, died August 9.
 Plunket, William Lee, Baron. British official, died January 24. He was born Dec. 19, 1864; educated at Harrow and at Trinity College, Dublin; served for a long time in the diplomatic service, but retired in 1894. He was private secretary to the Lord Lieutenant of Ireland, 1904, and governor of New Zealand, 1904-10.
 Poincare, Lucien.
 Pond, George Gilbert.
 Porter, Eleanor Hodgman.
 Powell, Maud.
 Powell, William Frank. Diplomat educator, died January 22. He was born June 26, 1848; was minister to Haiti and principal of negro schools, Camden, New Jersey.
 Pratt, David S.
 Prendergast, James M.
 Prescott, John Eustace.
 Price, William Thompson.
 Procter, Harley T. Soap manufacturer, died May 15. He was born in 1844.
 Proctor, Thomas Redfield.
 Pumpelly, Josiah Collins.
 Percy, Sholto.
 Queensberry, Marquis of. See above Douglas.
 Radloff, W. Anthropologist, died in 1920. He was the director of the museum in Petrograd and was regarded as the foremost investigator of the Siberian Turks.
 Raleigh, Sir Thomas.
 Ramsay, Sir John George.
 Randolph, Oscar A. Physician, died April 11 as the result of exposure in a snow storm in the course of a trip to the Arapahoe Peaks after he had ascended to an altitude of about 12,500 feet. He was associate professor of physics in the University of Colorado.
 Rappaport, S. Russian Jewish writer and Socialist, died November 8. He was born in 1868, and during the early period of socialistic activity in Russia and Poland was one of the leading spirits. He wrote extensively, and was widely quoted, often employing the pen-name "Ansky."
 Rattigan, A. B.
 Ravenshaw, H. S. L. British soldier, died June 6. He was born June 16, 1869, and served in India and in the South African war with distinction. He served during the European war, 1914-16 and was mentioned twice in despatches. He held the rank of major-general.
 Ravn, F. Kolpin. Danish plant pathologist, died at East Orange, N. J., May 24, in the course of a visit to the United States. He was born in 1873.
 Rawlins, William Donaldson. British lawyer, died May 21. He was born in 1846, educated at Eton and Cambridge and called to the bar in 1872. He wrote various legal treatises on companies, contracts, law of landlord and tenants, and receiverships.
 Rawnsley, Canon.
 Reed, John.
 Reedy, William Marion.
 Rejane, Gabrielle.
 Reville, Marc.
 Reynolds, James Emerson.
 Rhead, George Woollicroft.
 Riviere.
 Robertson, James. Scottish clergyman and author, died May 27. He was born in 1837 and was moderator of the general assembly of the Church of Scotland in 1909. He wrote *Our Lord's Teaching*, *The Christian Minister*, *Christian Uprising*, etc.
 Roosevelt.
 Roques, General Pierre A. French administrator, died February 26. He was born in 1856. He was at one time minister of war.
 Roman, Manuel Antonio. See Spanish Literature.
 Rowland, James.
 Roybet, Ferdinand. French genre painter, death reported in Paris April 11. He was born in 1840.
 Rose, Raymond.
 Rudd, Channing.
 Russell, Sir Edward.
 Russell, Sir Thomas Wallace.
 Ryan, Sir Charles Lister.
 Rydberg, T. R. Swedish physicist, died in the Summer. He was born in 1855. He was a professor at the University of Lund and a foreign member of the Royal Society; known for researches in spectroscopy.
 Rykachev, M. A. See Meteorology.
 Saccardo, P. A.
 Sanday, William.
 Sandon, Mathias. See Painting and Sculpture.
 Sanford, Marilla.
 Sauberzweig, Lieutenant-general von. German military governor of Brussels in 1916, died April 18.
 Sauret, Emile.
 Schallmayer, William. German geologist, died in the

Summer. He was well known as an authority on eugenics.

Schatz, Dr. F. Gynecologist, died in the Summer. He was formerly a professor at the university of Rostock.

Schierbrand, Wolf von.

Schiff, Jacob Henry.

Schneider, Hortense.

Schoenaich-Carolath, Prince Heinrich. German National Liberal Leader, died June 20. He was born in 1852.

Schreiner, Olive.

Schroeder, Leopold von. See German Literature.

Schulze-Smidt, Bernardine. See German Literature.

Schulze-Smidt, Bernardine. See German Literature.

Scott, Mrs. Maxwell (Mary Monica).

Scotten, Samuel Chatman.

Scull, Guy H. Newspaper writer, died October 29. He was born in 1877 and came into notice as a correspondent at the time of the Boer war, when he wrote a series of widely read articles for the New York papers.

Searle, Arthur.

Sedgwick, Arthur.

See, Milton. Architect, died October 27. He was born in 1853. His firm designed several important buildings in New York City including the original Metropolitan Opera House, the Museum of Natural History, the Presbyterian Hospital and many churches.

Senior, William.

Seward, William Henry.

Seymour, Horatio Winslow.

Seymour, Morris Woodruff.

Shackleton, Charles. See Painting and Sculpture.

Shannon, Richard Cutts. Former Congressman, died October 7. He was born in 1839.

Sherman, Andrew Magoun.

Simpson, Evelyn Blantyre. British writer, died January 23. She was born at Edinburgh, Scotland, in December, 1856, and wrote *Dogs of Other Days*, *R. L. Stevenson's Edinburgh Days*, and *R. L. S.* (1905).

Simpson, Henry Fife Morland. British clergyman and writer, died May 20. He was born at Newcastle-on-Tyne, Nov. 25, 1859, and graduated with honors at Cambridge in 1882. He edited selections from Ovid; collected records and reminiscences of Arberdeen Grammar School; and published other works relating to the legend of Montrose and to the antiquities of Scotland.

Sinclair, Cephas Hempstone. Civil engineer, died May 16. He was born in 1847. He was hydrographic and geodetic engineer in the United States Coast and Geodetic Survey.

Smith, C. Wenham.

Smith, George McLeod.

Smith, Isaac Gregory.

Smith, James Allwood.

Smith, Vincent Arthur

Smith, Watson.

Snow, Alpheus Henry.

Snydacker, Joseph G. Capitalist, died October 13. He was born in 1865. He was well known as an art collector in Chicago.

Soden, Thomas Spooner. British jurist, died August 5. He was born at Bath, May 15, 1837, and educated at Oxford. He was joint author of *Smith and Soden's Landlord and Tenant*.

Sonzogno, Edoardo.

Sonzogno, Lorenzo.

Southard, Elmer Ernst. Pathologist, died February 8. He was born at Boston, Mass., July 28, 1876. At the time of his death he was professor of neuro-pathology at the Harvard Medical School. He graduated at Harvard in 1897 and afterward studied in Germany. He was appointed to the Bullard chair at Harvard in 1909; and was officer or member of many important medical bodies. See *Psychical Research*.

Spanuth, August.

Sprague, Charles Henry. British general, died January 9. He was born March 8, 1842; served in India and Afghanistan with distinction, and was retired in 1899.

Spurgeon, William Porter.

Stacy, Marvin Hendrix. Civil engineer, died in 1920. He was born in 1883. At the time of his death he was professor in engineering and dean at the university of North Carolina.

Steele, Sanford H.

Stephen, Matthew Henry. Australian jurist, died April 1. He was born Dec. 5, 1828 and was admitted to the bar of New South Wales in 1850. By 1879 he had become Queen's counsel and was afterwards senior puisne judge of the supreme court of New South Wales.

Stetson, Francis Lynd.

Stevens, George Walter.

Stevens, Isaac Newton.

Stockwell, John Nelson.

Stokes, Sir G.

Struve, Hermann. Astronomer, died August 12. He was born in 1822.

was the director of the Berlin-Babelsberg Observatory.

Stuart, Sir Thomas Anderson.

Stuck, Hudson.

Sugi, Viscount M. Privy councillor, Tokio, Japan, died May 5. He was born in 1840.

Sullivan, Roger C.

Supan, Alexander. See Meteorology.

Sutton, Charles William.

Sutton, Sir Henry. British jurist and writer on law, died May 30. He was educated at Rugby and Cambridge, graduating with high honors; and was judge of the King's Bench, 1905-10. He wrote *Law of Tramways*.

Sweden, Crown Princess of. Princess Margaret of Connaught, died at Stockholm, Sweden, May 1. She was born in England, January 15, 1882, the eldest child of the Duke of Connaught, and married June 16, 1905 to Gustav Adolf, Duke of Skania (afterwards Crown Prince), by whom she had five children. During the war she was active on behalf of British prisoners.

Symons, Thomas William.

Taffe, Thomas.

Takagi, Baron Ken Kwan. Japanese hygiene expert, died April 13. He was born in 1849.

Takahashi, Sakue. Japanese authority on international law, died in September. He was born in 1867.

Talbert, Joseph Truitt.

Talcott, Charles Andrew. Former Congressman, died February 27. He was born June 10, 1857 and graduated at Princeton in 1879. He practiced law at Utica and was mayor of that city, 1902-6; member of Congress, 1911-15. In politics he was a Democrat.

Tarbell, Frank Bigelow.

Tarleton, Francis Alexander.

Taylor, Howard.

Thode, Henry. German historian, died at Copenhagen November 10.

Thomas, Olive. Movie actress, died in Paris, France, September 10.

Thomson, Hugh. British artist, died May 7. He was born June 1, 1860 and was well known as a book illustrator. He illustrated many of the English classics.

Thorne, W. Van S.

Thursby, Sir John.

Tilak, Bal Gangadhar.

Timriazeff, K. A. Botanist, died April 29. He was professor in the university of Moscow. He was born in 1880.

Tonnetti, Michel. See Painting and Sculpture.

Tracy, S. M. Botanist, died September 5. He was a worker in the Agricultural Experiment Station Service.

Treub, Hector.

Trevor, Sir Arthur Sharies.

Trotter, Edward Bush.

Trumbull, Frank.

Tulloch, W. W.

Turner, John Sidney. British physician and surgeon, died January 16. He was born at Old Shoreham, England, Feb. 12, 1843; educated at Guy's Hospital. He was a founder of the Sister Institute and held various important positions in medical institutions. He contributed extensively to the medical press.

Tuthill, Richard Stanley.

Twining, Phillip Geoffrey.

Ure, Ernesto S. Argentine newspaper publisher of Buenos Ayres, Argentina, died May 1.

Ureta, Jesus. Mexican minister to Argentina, died at the beginning of December.

Vail, Theodore N.

Valle de Paz, Edgardo del.

Value, Beverley W.

Vanderbilt, William Kissam.

Van Laer, Alexander Theobald.

Vankatasaweta, Maharajah of Bobbili.

Van Straubenzee, Turner. British general, died February 27. He was born Aug. 9, 1838 and entered the Royal Artillery in 1875. He served in India, and in the Egyptian campaigns with distinction.

Van Winkle, Edgar Beach. Civil engineer, died April 27. He was formerly city engineer of New York City. He was born in 1842.

Villarón, Luis Felipe. Prominent Peruvian jurist and diplomat, died at Lima, Peru, November 4. He had at one time been the head of the supreme court of Peru. In 1914 he was the minister of finance in the government.

Vincent, John Heyle.

Vladimir, Grand Duchess. See Vladimir.

Von Danckelman, Alexander. See Meteorology.

Von Ganz, Friedrich. See German Literature.

Von Grathaus, J. E. See German Literature.

Wace, Richard. British general, died May 25. He was born July 16, 1842; was educated at Marlborough, and entered the Royal Artillery in 1864. He served with honor in the Afghan campaign and was general of ordnance of India, 1897-1902.

Wantage, Harriet Jones Lloyd, Lady.

Ward, Bernard (Bishop of Brentwood).
 Ward, Mrs. Humphrey.
 Warfield, Edwin. Former governor, died March 31. He was born in Howard County, Md., May 7, 1848. He was the founder and president of important safe deposit companies. Under President Cleveland he was surveyor of the port of Baltimore, 1886-90. He was governor of Maryland, 1904-8.
 Warre, Edmond.
 Weber, Max. German economist, died at Munich, Germany, June 15. He was born in 1865.
 Weed, Smith Mead. Democratic leader of Plattsburg, N. Y., died June 7. He was born in 1834.
 Welch, Deshler.
 Weld, Stephen Hinot.
 Wertheim, Jacob.
 West, Samuel.
 Wetherbee, George.
 Wheeler, Samuel H.
 White, James Terry. Publisher, died April 5. He was born at Newburyport, Mass., in 1845; removed to San Francisco in 1863 and founded there the firm of publishers that bore his name, of which he was president after 1902. After 1890 he was the editor of an encyclopaedia of national biography.
 White, Sinclair.
 Whitelock, George.
 Whiton, James Maurice.
 Wilkins, George. British clergyman and scholar, died February 11. He graduated at Trinity College, Dublin, in 1880 and was ordained in 1891; was divinity lecturer there in 1893; select preacher in 1895; and professor of Hebrew in 1900. He published *The Growth of the Homeric Poems* (1880), and *Deuteronomy* (1902).
 Wilkinson, William Cleare.
 Williams, George Forrester.
 Williamson, Charles Norris.
 Williamson, Francis John. British sculptor, died March 12. He was born at Hampstead, England, July 17, 1833. His works include statues of Queen Victoria in London, and in various parts of the empire, and many other public statues, besides portrait sculpture for private individuals.
 Wilson, James.
 Winans, Walter. British-American sportsman, died August 12. He was son of William L. Winans, of Baltimore, Md., and was educated at Petrograd, Russia. He wrote: *Hints on Revolver Shooting, Automatic Pistol Shooting, The Sporting Rifle, Practical Rifle Shooting, The Art of Revolver Shooting, Shooting for Ladies, Deer Breeding, and Animal Sculpture*.
 Winchester, Caleb J.
 Winslow, John Bradley.
 Winterhalter, Albert Gustavus.
 Wladimir, Grand Duchess.
 Wood, Horatio O.
 Wood, Sir Lindsay.
 Woods, Herbert Spencer.
 Wrangel, General.
 Wright, Arthur.
 Wundt, Wilhelm.
 Young, William.
 Zander, G. Physician, died at Stockholm, Sweden, June 19.
 Zorn, Anders Leonard.

NEEDHAM, JOSEPH. British physician, died, August 2. He was born in London, 1853; educated privately; and pursued medical studies at the London Medical College and at the University of Aberdeen, gaining honors in several branches of medicine and surgery. He was assistant professor of anatomy in the University of Aberdeen and demonstrator of histology in the London Hospital Medical College. He contributed extensively to the medical and scientific press.

NEGRI SEMBLIAN. A federation of nine divisions composing a state in the Federated Malay States. (q.v.).

NELSON, W. H. DE B. See PAINTING AND SCULPTURE.

NETHERLANDS, THE, or HOLLAND. A kingdom of Central Europe on the North Sea, lying in latitude 50° 46' and 53° 34' north, and longitude, 3° 22' and 7° east, and consisting of 11 provinces. Capital, The Hague.

AREA, POPULATION, ETC. Total area, exclusive of water, 12,582 square miles; population, Dec.

31, 1914, 6,778,699, of whom 3,371,919 were males and 3,406,780 were females. The area and population by provinces and density per square mile were given as follows by the *Statesman's Year Book* for 1920:

Provinces	Area: English sq. miles (1909)	Population	
		Dec. 31, 1918	Per sq. mile 1918
North Brabant	1,920	721,570	378
Guelders	1,939	727,165	375
South Holland	1,181	1,648,570	1,458
North Holland	1,066	1,278,382	1,199
Zealand	707	247,844	351
Utrecht	525	331,313	631
Friesland	1,243	384,779	310
Overijssel	1,295	482,751	384
Groningen	881	559,950	409
Drenthe	1,028	208,672	198
Limburg	847	442,783	523
Total	12,582	6,778,699	589

Total area, including interior waters, gulfs, and bays, was given in 1909 at 15,760 square miles. Emigration which has been for the most part to North America was 1170 in 1918. The population of the 10 largest cities on Dec. 31, 1918, was as follows:

Amsterdam	644,070	Haarlem	75,280
Koiterdam	501,281	Arnhem	70,543
The Hague	352,079	Leyden	61,113
Utrecht	186,805	Nimeguen	66,439
Groningen	875,940	Tilburg	60,226

On Dec. 31, 1918, 59.06 per cent of the population was given as rural, that is to say, as living in towns of 20,000 inhabitants or less. Government educational statistics for 1917-18 were as follows: Universities (public), 4632 students; elementary schools (public), 620,338 pupils; elementary schools (private), 443,258; infant schools (public), 36,265; infant schools (private), 113,384.

PRODUCTION. In 1919 the total cultivable area and forest was 2,461,112 hectares; under wheat, 141,340 acres with a production of 774,918 quarters; rye, 502,767 acres and 1,296,293 quarters; barley, 57,784 acres and 311,833 quarters; oats, 380,270 acres and 2,388,823 quarters. (See AGRICULTURE; and AGRICULTURAL EXPERIMENT STATIONS). The live stock according to the census of March 5, 1919, were: Cattle, 1,969,609; pigs, 449,829; sheep, 437,075; horses, 36,201. The following information pertaining to the year 1919 was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: The output of beet sugar in 1919 was estimated at not more than 175,000 tons compared with 199,000 tons in 1918 and 259,550 tons in the season of 1916-17, owing to the lack of coal necessary for the operation of the beet-sugar factories at full capacity. In order to supply the country with sugar, the government made purchases abroad, particularly in Java, which account for the sharp advance in imports from a value of \$160,400 in 1917 and \$2800 in 1918, to \$8,639,200 in 1919. However, more sugar was exported than was imported. The great development of the oleomargine industry in the Netherlands led to heavy imports of animal fats as well as of vegetable oils and oil-bearing nuts and seeds. Shipments of cotton into the Netherlands in 1919 marked the establishment of what is hoped to be a permanent European cotton market which will compete with

other European markets. The imports, mostly of American staple, in 1919 indicated a large increase over previous years. The iron and steel trade increased as a result of the removal of war restrictions and because of the lively competition of German and Belgian producers on the one hand—from which Dutch importers in normal times secure most of their supplies of this sort—and British and American iron and steel producers on the other. Few of the minor industries started during the war had a good year. The larger industries did much better. Shipbuilding, which had assumed considerable proportions before the war and advanced immensely during the war, continued with unabated vigor. The production of coal during the year was only fairly satisfactory, remaining practically the same as that of 1918. The total output of all Dutch mines was placed at 3,400,000 tons, as compared with 3,399,000 in 1918, 2,995,000 in 1917, 2,563,000 in 1916, 2,250,000 in 1915, and considerably less than 2,000,000 tons in previous years. The chief mines are those of the government in Limburg, where the output reached a total of 1,476,000 tons in 1919. There was also an output of 1,800,000 tons of lignite as compared with 1,425,617 tons in 1918. This lignite is of poor quality. The deposits were not worked previous to 1917 and in that year the output was of little moment. The diamond industry had a year of varied experience commencing with high prices and a strong demand for gems and winding up the year with lower prices, which caused losses to dealers and manufacturers. Considerable advance was made in the automobile industry while the manufacture of bicycles, one of great importance in the Netherlands, had a good year as the result of improved conditions as to imported materials. The manufacture of cigars and tobacco was hampered somewhat by the high price of tobacco leaf and high wages and the difficulty of exporting goods in anything like the usual volume. Great variations in values of both tobacco and its products abroad also worked to the disadvantage of the industry. Clothing manufacturers likewise had to contend with similar difficulties. Returns of the fisheries of 1919 were not available, but in 1918 the vessels engaged numbered 6172 and the crews about 17,832.

COMMERCE. According to the American consular reports, the year 1919 was the greatest year in the history of Dutch foreign trade. The total foreign trade amounted to the equivalent of \$2,014,833,200, of which the imports were valued at \$1,321,821,200 and the exports at \$693,012,000. The figures given compare with imports in 1918 valued at \$244,964,000 and exports at \$166,953,800, or a total turnover value of \$411,917,800. In 1917 the imports were valued at \$432,787,200 and the exports at \$334,988,800, or a total turnover of \$767,776,000. The changes in the country's trade during and after the war are indicated by the comparison of such figures. The trade of the Netherlands before the war reached something like \$1,125,000,000, and in the last year of the war, although the country was neutral, trade returns fell to less than a third of that amount despite increased values. There were several explanations offered for the increase in 1919. In anticipation of the opening of trade with Germany large quantities of goods were sent from all over the world to the Netherlands during the year to be near Germany when the expected removal of restrictions took place.

Much of the increase in exports was due to the shipment of Dutch manufactures whose free movement had been difficult or impossible during the war and much of it was due to increased values for manufactured goods. The average value of a ton of imports into the Netherlands during 1919 was \$108, and the average value of a ton of exports was \$240. In other words, the Netherlands imported raw materials and exported highly valuable finished products. The low and fluctuating value of the mark rendered it practically impossible for credit to be established over a long enough period to get many lines of goods from abroad to the German buyer. The result was that goods were brought to the Netherlands on a Dutch credit and sold to German importers on a more or less cash basis.

The declared exports from all the Netherlands to the United States during 1919 showed a greater increase than exports to any other country. Trade with the United States was more directly affected by war conditions than with other nations since it represented a longer sea haul. With the removal of restrictions and with the availability of tonnage which followed the armistice, there was a large movement of Dutch produce which had accumulated for American owners during many months. The declared exports from the whole of the country to the United States in 1918 and 1919 were as follows:

Articles	1918	1919
Antiquities		\$108,214
Art. works of	\$26,867	233,939
Biscuits, etc.		33,508
Books and printed matter	27,889	74,220
Chemicals, drugs and dyes	33,438	877,385
Cinchona and quinine	6,052	178,035
Chocolate and cocoa		540,966
Cotton goods and laces	8,386	188,712
Diamonds:		
Polished	6,157,157	62,524,582
Rough	4,166	336,235
Earthen and china ware	7,790	44,395
Fertilizers, n. e. s.		227,926
Flax and linen		281,949
Fruits and nuts		17,528
Furs and fur skins	75,977	648,901
Gloves, kid		193,132
Glue	50,299	277,086
Hardware and metal manufactures	6,450	145,992
Herring, pickled		1,224,585
Hides and skins		7,295,234
Hops and vegetables		120,597
Milk and dairy products		115,932
Miscellaneous food products ..	2,917	98,376
Oil, linseed		659,750
Oils and wax, all other	19,785	380,357
Paints and colors	88,941	196,342
Paper manufactures		21,165
Paper stock and rags		1,542,339
Plants, bulbs	1,139,124	290,631
Plants, all other	91,171	605,779
Potash and soda salts		382,567
Fish, preserved		66,634
Rubber		3,135,949
Seeds:		
Sugar beet		1,162,928
All other	427,508	774,794
Silk, artificial		708,200
Sugar		204,138
Tobacco		325,174
Wood, and manufactures of ..	4,686	77,802
All other articles	36,671	448,240
Total	\$8,165,224	\$86,264,263

Preliminary figures for 1920 indicated that the imports during the year amounted to 3,333,000,000 guilders. Computed at the average exchange rate for the year, this would amount to exactly a billion of dollars. The export trade during 1920 amounted to 1,702,000,000 guilders,

and computed at the average exchange for the year would be equivalent to \$567,000,000. Gold and silver are not included in the above statistics. The declared exportation at Amsterdam during 1920 amounted to 78,888,249 guilders; at Rotterdam, 18,024,189; at the Hague and others, 2,189,963, or a total consignment to the United States of 99,866,099 guilders.

SHIPPING. The record of entries and clearances of shipping in Dutch ports for the seven years, 1913-19, illustrates graphically the general shipping situation of the country. Returns for 1919, despite the great increase over the previous year, were only a little more than half those of 1914, and considerably less than half for 1913. The record for the seven years was as follows:

Years	No. of ships	Net tonnage
1913	16,996	18,197,783
1914	12,154	13,540,051
1915	6,351	6,621,478
1916	5,114	4,681,117
1917	2,184	1,858,951
1918	1,779	1,668,093
1919	7,082	7,097,716

The following table shows the shipbuilding tonnage in comparison with other leading European countries:

Countries	June 30, 1920		Sept. 30, 1920	
	No. of stra.	Gross tons	No. of stra.	Gross tons
Holland	152	898,465	163	422,635
Italy (including Trieste)	117	340,138	113	352,377
France	88	268,819	80	290,136
Japan	56	254,260	72	262,407
British Dominions	91	255,724	68	198,719

FINANCE. The budget estimates for 1920 were as follows: Revenue, 409,818,856 guilders; expenditures, 572,257,978 guilders. The chief sources of revenue were: excise duties and direct taxes, including the tax on incomes, trades, professions, etc., and the chief items of expenditure were: payments on the public debt and appropriations to the Departments of Labor, Public Instruction, Agriculture, and Public Works. The national debt for 1920 was given at 2,132,889,000 guilders, bearing an annual interest of 101,030,343 guilders.

GOVERNMENT. Executive power is vested in the sovereign (Wilhelmina Helena Pauline Maria, born Aug. 31, 1880); and legislative power in the sovereign and parliament or States-General, which consists of two chambers, the upper chamber having 50 members elected by the states and the second or lower chamber having 100 deputies elected directly. The second chamber was elected in 1918 and comprised the following representatives distributed by parties: Catholics, 30; Socialists, 22; Anti-Revolutionists, 13; Protestant party, 7; Liberal Union, 6; Democrats, 5; Old Liberals, 4; others, 13. The ministry at the beginning of 1920 was constituted as follows: Prime Minister and Minister of the Interior, Dr. Ch. J. M. Ruys de Beerenbrouck; Foreign Affairs, van Karnebeek; Finance, de Vries; Justice, Heemskerk; Colonies, de Graaf; War, General Pop; Public Works, König; Agriculture, Commerce, and Industry, van Yesselstein; Marine, General Pop; Labor, Aalberse; Instruction, Science and Arts, de Visser.

HISTORY. The departments of marine and war were combined in one, March 29, as the department of national defense, and Gen. W. F. Pop

was appointed minister. A serious dock strike from February 24 to April 28 brought shipping practically to a standstill. The new working week law provided that the week should consist of 45 hours, dividing the work for factories, workshops, and offices into 5 days of 8 hours and 1 day of 5 hours, each; that dock labor should be determined according to the needs of the season and the nature of the work; that a special rule should apply to farm labor which should be for 8 hours a day in winter, 10 in summer, and 12 in the harvest season; that Sunday labor should be allowed only on permission by the government; and that children under the age of 13 should not be employed.

Measures under consideration by the States-General, which opened September 21, included partial revision of the constitution, a new educational law, laws pertaining to accidents to agricultural workmen, the better regulation of industry, the extension of the sanitary service, etc. Increased taxation was unavoidable and a plan was under consideration in the autumn. The new taxation bore heavily upon the income of the former German emperor, to whom a delay was granted. During 1920, the emperor continued to reside at Amerongen. The former emperor on September 23, presented to the municipality of Amerongen, a hospital which he had built and equipped under the supervision of the Knights of St. John.

The question of resuming relations with the Vatican was under discussion in the latter part of the year and on December 23, after a heated debate, a measure was passed for the purpose. Relations with the Vatican had ceased after 1907. There was a difficulty with Jugo-Slavia, toward the close of the year, resulting in the breaking off of relations with that country on account of the arrest in 1914 of the Dutch consul at Belgrade as an Austrian subject without warning to the Dutch government. The question of trade with Russia was much agitated during the year. At the close of the year it was understood that the foreign office would not restrict business transactions between the merchants of the two countries, but would not assume any responsibility for them. There was some friction with Belgium toward the close of the year on account of the Dutch government's refusal to extradite the former librarian of Ghent University, who had taken part in the Flemish separatist movement under the Germans.

Legislation adopted for the increase of the revenue taxes on spirits and a measure of that nature went into effect January 1. This increased the tax on spirits by 150 per cent, and that on beer by 100 per cent. It was believed by the temperance advocates that the measure would result in placing the liquor beyond the reach of the poorer classes. (See NAVAL PROGRESS).

NETTO, JOSEPH SEBASTIAN. See ROMAN CATHOLICS.

NEVADA. POPULATION. According to the preliminary report of the census of 1920, there were 77,407 residents in the State, Jan. 1, 1920, as compared with 81,875 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 3,164, an increase of 17.7 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture covering 1910 and 1920:

Crop	Year	Acreage	Produce Bu.	Value
Barley	1920	8,000	304,000	\$502,000
	1919	8,000	280,000	420,000
Wheat	1920	18,000	420,000	756,000
	1919	24,000	550,000	1,177,000
Hay	1920	345,000	651,000	9,226,000
	1919	345,000	577,000	11,135,000
Potatoes	1920	6,000	1,032,000	1,610,000
	1919	6,000	900,000	1,350,000

* Tons.

MINERAL PRODUCTION. The value of the gold, silver, copper, lead, and zinc mined in Nevada in 1920 was about \$23,960,000, according to preliminary figures of the United States Geological Survey, an increase of about \$527,000 over the

\$99,000, and in 1914 \$52,000. The value of products in 1919 showed an increase over that in 1914 of \$6,791,000, or 42.2 per cent. The average per establishment in 1919 was approximately \$138,000 and in 1914 \$89,000. The value added by manufacture in 1919 showed a decrease from that in 1914 of \$383,000, or 5.7 per cent. The value added by manufacture in 1919 formed 27.9 per cent of the total value of products and in 1914, 42.1 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 32, or 1.5 per cent, while the average number of wage earners decreased 536, or 14.7 per cent. A comparative summary for 1914 and 1919 follows:

	Census—		Per cent. of increase, ¹ 1914-1919
	1919	1914	
Number of establishments	166	180	— 7.8
Persons engaged in manufactures	3,566	4,118	—13.8
Proprietors and firm members	186	179	—24.0
Salaried employees	311	279	11.5
Wage earners (average number)	3,119	3,655	—14.7
Primary horsepower	13,874	18,748	—26.0
Capital	\$16,835,000	\$18,591,000	23.9
Services	4,906,000	4,049,000	21.2
Salaries	588,000	471,000	24.8
Wages	4,318,000	3,578,000	20.7
Materials	16,491,000	9,317,000	77.0
Value of products	22,874,000	16,083,000	42.2
Value added by manufacture (value of products less cost of materials)	6,383,000	6,766,000	— 5.7

¹ A minus sign (—) denotes decrease.

output in 1919. A large decrease in the quantity of gold was balanced by increases in other metals, but the output of copper, lead, and zinc was still far below that of 1918. The gold output of Nevada decreased from \$4,541,502 in 1919 to about \$3,579,000 in 1920, a decrease of more than 21 per cent.

The mine production of silver increased in quantity from 6,863,580 ounces in 1919 to about 7,786,000 ounces in 1920 and in value from \$7,687,210 to about \$8,480,000. The large mines of the Tonopah district produced about 4,970,000 ounces of silver in 1920, against 3,568,875 ounces in 1919 and 5,929,920 ounces in 1918. The mine output of copper increased in quantity from 52,331,175 pounds in 1919 to about 55,790,000 pounds in 1920, but decreased in value from \$9,733,599 to about \$9,551,000. The output was less than half that of 1918. The mine output of lead increased in quantity from 15,349,370 pounds in 1919 to about 19,510,000 pounds in 1920 and in value from \$813,517 to about \$1,592,000. The mine output of recoverable zinc increased slightly in quantity from \$9,004,698 pounds in 1919 to about 9,100,000 pounds in 1920 and in value from \$657,343 to about \$737,000. In 1920, as in past years, most of the output was made in the Yellowpine district, in Clark County.

MANUFACTURES. Preliminary results of the census of manufactures in the State for the year 1919 showed certain increases over 1914, but the totals for the State were seriously affected by the decrease in the smelting and refining of copper in 1919 as compared with 1914. The capital invested, as reported in 1919, showed a gain of \$3,244,000, or 23.9 per cent, over that in 1914. The average capital per establishment was approximately \$101,000 in 1919 and \$76,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$7,174,000 or 77 per cent. The average cost of materials per establishment in 1919 was approximately

FINANCE. According to the annual report of the State Treasury, the balance in the treasury on Jan. 1, 1920 was \$814,737, and on Dec. 31, 1920, it was \$925,945. The total receipts for the year amounted to \$4,339,452; while the disbursements for the year amounted to \$4,228,243. Of the receipts \$835,500 were from the sale of bonds, while by far the largest single item of expenditure was that for the State highway fund (\$1,687,741).

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 15,479; Cox (Democrat), 9851; as compared with the following vote in 1916: Wilson (Democrat), 17,778; Hughes (Republican), 12,131; Benson (Socialist), 3065. The vote for United States Senator was: Oddie (Republican), 11,550; Henderson (Democrat), 10,402; Anne Martin (Independent), 4981.

NEVADA, UNIVERSITY OF. A co-educational, State institution of higher education at Reno, Nevada, founded in 1874. In the fall of 1920 the enrolled students numbered 465, while there were 112 students enrolled in the summer school. The faculty numbered about 59. The library contained about 34,000 bound volumes and several thousand pamphlets. The education building was completed and organized in 1920. President, Walter E. Clarke, Ph.D., LL.D.

NEWARK, N. J. See GARBAGE, and WATER WORKS.

NEW BRUNSWICK. One of the Maritime Provinces of Canada, east of the State of Maine and south of the Province of Quebec. Capital, Fredericton. Area, 27,985 square miles; population (1911), 351,889; showing a density per square mile of 12.61. Largest city, St. John; population (1911), 42,511. The capital, Fredericton, had a population (1911) of 7208. Spring wheat in 1919 yielded 748,000 bushels; oats, 9,852,000 bushels; barley, 269,000 bushels; potatoes, 13,489,000 bushels; cattle in 1919 numbered 365,000. It is under a lieutenant-governor.

nor appointed by the governor-general of Canada and a legislative assembly of 48 members elected. February 17, and comprising at the beginning of 1920, 27 Liberals and 21 Conservatives. Lieutenant-governor at the beginning of 1920, W. Pugsley; Prime Minister, W. E. Foster. (See CANADA).

NEW CALEDONIA. A French colony in Melanesia, consisting of the island of New Caledonia and the following dependencies: Isle of Pines; Wallis Archipelago; Loyalty Islands; Huon Islands; and Futuna and Alaf. New Caledonia has a length of over 248 miles and an average breadth of 31 miles. Area, 7650 square miles; population (1911), 50,608, of whom 5671 were of convict origin. Capital, Nouméa, with a population of about 10,000. Imports (1918), £870,000; exports, £1,046,800. The chief imports were: coal, wine, flour, and rice; and the chief exports, coffee, copra, rubber, guano, and minerals. It is under a governor aided by a privy council and an elective council-general.

NEWFOUNDLAND. An island colony of Great Britain in the northeastern part of the Gulf of St. Lawrence. Area, 42,734 square miles; population (1911), 242,619; estimated Jan. 1, 1919, 254,587. Dependent on it is Labrador (see below). Capital, St. John's, with a population (1918) of 34,045. Other towns with their populations (1911) are: Harbour Grace, 4279; Bonavista, 3911; Carbonear, 3540. There is a considerable production of agricultural crops and live stock, but the chief occupation is fishing, and next to that is the paper and pulp industry. In 1918, 940 men and 56 Newfoundland sailing vessels were engaged in the bank cod fishery, a considerable falling off from the previous year and the catch in 1918 was valued at \$1,362,200. In the shore cod fishery, 15,120 small boats of various kinds were employed and 39,680 men. The output was valued at \$15,563,843. In 1919 the number of seals caught was 81,293, valued at \$278,000, a large falling off from the previous year, and in the season of March-April, 1920, the catch was the smallest on record. The growth of the pulp and paper industry may be seen from the following table covering the years 1913-14 to 1919-20:

Year	Pulp Tons	Pulp Value	Paper Tons	Paper Value
1913-14	51,605	372,678	40,077	1,795,488
1914-15	48,451	379,220	40,556	1,817,193
1915-16	22,892	197,608	62,527	2,801,769
1916-17	27,413	351,072	33,389	1,510,440
1917-18	11,494	111,358	34,060	2,302,243
1918-19	11,151	475,178	21,819	1,545,344
1919-20	19,864	334,276	80,719	4,725,660

Rich iron deposits have recently been found, and copper ore, and pyrites are profitably worked. Coal, silver, and lead also exist.

During the year announcement was made that a concession had been granted by the government for a development project which involved the construction of a through line from St. John's to Ship's Cove or St. Alban's on the south coast with a junction on the main line at Bishops' Falls or Grand Falls. The organization of a company to carry out this work was in progress and, should sufficient financial support be forthcoming, it was thought that the scheme will involve no cost to the government. The plan proposed a line of steamers from St. Alban's to North Sydney on Cape Breton Island in place of the service from Port aux Basques, which

would reduce the time between Canada and the United States by 12 hours. The proposed scheme also included the Botwood railway which would connect the north and south coasts of the island and remove the inconvenience under which Newfoundland suffered of having winter ports on the two extreme ends of the island. By the new route the most difficult portion of the main line would be avoided and the rail haul reduced by about 200 miles. It was anticipated that the new branch line could be operated electrically from water power available near the southern terminus.

The executive power is in a governor aided by an executive council and the legislative power in a legislative council of 24 members, and a legislative assembly. The legislative assembly after the general election of November, 1919, had 23 government supporters and 19 members of the oppositions. Governor and commander-in-chief at the beginning of 1920, Sir C. A. Harris; Prime Minister, R. A. Squires.

Included in the administration of Newfoundland is that portion of the peninsula of Labrador, which lies between the Hudson Strait and Blanc Sabline with a coastline of about 600 miles; area, about 120,000 square miles and population in 1918, 4073.

The following account of conditions in 1920 appeared in the press at the close of the year: The support of the Squires' ministry which assumed office after the election of November, 1919, rested largely on the Fishermen's Protective Union, headed by Mr. W. F. Coaker, its president. This organization, created and built up by him, had become one of the largest industrial as well as political factors in the island. He held strong views on the subject of government control of the fish trade with the object of increasing the price obtainable by the people for their products, and the new ministry proceeded to utilize the machinery created for war time purposes to put this policy into effect. Regulations were promulgated by the government, promptly on taking office, preventing the export of fish unless owners would undertake not to sell it at prices lower than those fixed by the government. This policy naturally evoked a storm of hostile criticism, both from political opponents and from elements among the business community, who objected to interference with the ordinary methods of trade. However, the government persisted and at the ensuing session of the legislature carried through a series of measures prescribing the methods of (a) curing fish; (b) grading or culling the same; (c) the class of vessels to carry the fish to market; (d) standardizing the fish to be conveyed thereto and most important of all (e) enabling the government to regulate the sailing time of vessels so that markets might not be overstocked and to fix minimum prices for the sales of the various qualities in the different markets to which the fish ordinarily went. This policy was bitterly challenged and it may be said that for the whole of the 12 months there was turmoil and dissension in the fishing centres of the island and on "Change" at St. John's in regard to said policy. The opponents of it said it had not helped in any manner or fashion toward increasing the price of the fishing products, and they pointed to figures showing the decline in prices in 1920, compared with the two previous years. Advocates of the policy, on the other hand, claimed that but for the regulations being enforced conditions would be much worse."

There has been for many years a dispute with Canada over the boundary of Labrador and in December a commission was appointed to define the boundary line. When the Labrador coast was restored to Newfoundland in 1809 the boundary was left indefinite. In 1824 the British government defined the Labrador coast as lying eastward of a line running north and south from the Sablon Bay, as far as the Anticosti and other adjacent islands, but the line was not marked out. The commission of December, 1920 was appointed to provide for the survey of the line. The importance of the matter had greatly increased in view of the recent discovery that the interior of Labrador was not only very rich in game resources but in forests and other commercial possibilities.

NEW GUINEA. An island of the East Indies, next in size to Australia and Greenland. Area, about 310,000 square miles; population, estimated roughly at a little under 1,000,000. It is divided under Australian, Dutch, and British control, the former German dominion having ceased during the war. It is distributed as follows: Western part to 141° east, included in the Dutch East Indies; northeastern part comprising the former German colony of Kaiser Wilhelmsland, assigned to Australia; southeastern part included in the British colony of Papua. (See DUTCH EAST INDIES; GERMAN NEW GUINEA; and PAPUA.)

Portions of the country were entirely unknown until the explorations of Captain H. Detzner during the war, of which an account was given in 1920. It seemed that in the spring of 1914 he had undertaken a journey for scientific purposes into a region never before visited by a white man,—namely, the section between the British and German possessions. After four months he reached 144° of east longitude and made a number of observations and reckonings. He reached the watershed where he discovered a horde of natives living in a comparatively high degree of civilization, whom he called the "Papuan of the Cliffs." It was an Alpine region with a height above sea level of between eight and 10 thousand feet where he gathered typical specimens of alpine flora. He found the natives living in clans in the valleys. He regained the coast after the war had broken out and there found that the country was in the hands of the Australians. Thereupon, he returned with some native soldiers into the extreme part of the northwest and attempted thence to cross into the Dutch dominions. In his journey in that part of the country he again made observations and collected specimens. He passed four years in wandering and, falling ill, narrowly escaped death. He was finally able to return to Germany at the end of 1918 by way of Australia and Capetown.

NEW HAMPSHIRE. POPULATION. According to the preliminary report of the census of 1920, there were 443,083 residents in the State, Jan. 1, 1920, as compared with 430,572 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 20,523, a falling off of 24.1 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	9,000	405,000	\$587,000
	1919	11,000	512,000	870,000

Crop	Year	Average	Produc. Bu.	Value
Hay	1920	* 470,000	560,000	18,900,000
	1919	* 455,000	588,000	14,088,000
Potatoes	1920	15,000	1,950,000	2,022,000
	1919	14,000	1,470,000	2,572,000

* Tons.

FINANCE. Balance on hand Sept. 1, 1919, \$180,924.26; receipts Sept. 1, 1919 to Aug. 31, 1920, \$7,452,632.54; disbursements during year ending Aug. 31, 1920, \$7,446,823.25; balance on hand Sept. 1, 1920, \$186,733.55.

EDUCATION. During the year ending Aug. 31, 1920, the public school houses numbered 1181; pupils, registered, 74,311; average daily attendance, 53,245. The number of different teaching positions was 2648 of which 2433 were held by women and 215 by men. The average yearly salary of elementary teachers was \$596 for women and \$864 for men. Of these 54 had received no higher education than that afforded by the elementary schools; 680 no higher than a high school education; 1220 were graduates of a normal or training school; and the rest had received higher training including 346 who had graduated from colleges. During the past two years teachers' salaries had been raised but these gains had not kept pace with the general increase in the cost of living or paralleled increases in other occupations.

CHARITIES AND CORRECTIONS. The State charitable and correctional institutions with their situations are: Soldiers' Home, Tilton; Sanatorium, Benton; School for Feeble-Minded (363 inmates), Laconia; Hospital, Concord; Prison, Concord; Industrial School (403 pupils), Manchester. There is also a State workshop for the blind at West Manchester. The total number of inmates of almshouses, Aug 31, 1920, was 852. The jail population in 1920, was 319. In respect to jails the annual report of the State Board of Charities and Corrections declared:

There is nothing to be said in favor of the jail system as exemplified in New Hampshire jails. Whether or not these places of confinement are in fairly good condition, the fact remains that in all ten jails of the state idleness prevails, reading matter is scarce or entirely wanting, and conditions are most favorable for the making of criminals of first offenders, and for confirming older ones in the error of their ways."

In respect to child welfare, it said:

"Activities along the line of providing for neglected children and of securing medical and surgical aid when needed are in evidence, not alone through the efforts of charitable organizations, but through the school nurse, the district nurse, the Red Cross, and through special work for children in hospitals throughout the state, in the way of attention to adenoids, tonsils, orthopedic work, etc. A children's clinic in connection with the Memorial Hospital in Concord, N. H., has proved a valuable asset as a means of alleviating the ills to which children are subject."

TRANSPORTATION. The railway mileage of the State in 1920 as given by the New Hampshire Public Service Commission was 1272.27.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 94,947; Cox (Democrat), 62,562; Debs (Socialist), 1235; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 43,781; Hughes (Republican), 43,725; Benson (Socialist), 1318. The vote for governor was: Brown (Republican), 93,021; Tilton (Democrat), 62,080; Butler (Socialist), 1080; and for United States Senator: Moses (Republican), 89,937; Stevens (Democrat), 64,925; Wilkins (Socialist), 1004.

NEW HAMPSHIRE STATE COLLEGE.

A co-educational State institution of the higher learning at Durham, N. H., founded in 1866. There were 849 students enrolled for the fall session in 1920. The faculty numbered 92, including 18 new teachers. The productive funds consisted of the annual income from \$800,000, the bequest of Thompson, which amounted to \$32,000 and in addition the following: Thompson lands (campus); Land Grant Act moneys; funds under the Morrill Bill; Biennial appropriations from the State Congress; Smith-Lever Acts funds; and Smith-Hughes fund. The library contained 40,000 volumes and 160 periodicals in the reading room. A women's dormitory was finished in time for occupancy in October. President, Ralph Dorn Hetzel, A.B., LL.B., LL.D.

NEW HEBRIDES. A group of Melanesian islands under the joint administration of France and Great Britain in accordance with the Anglo-French convention of October, 1906. Area, 5100 square miles; population about 70,000. The seat of government is Vila on the island of Efata. The natives are uncivilized, but there have been several French Catholic mission schools and many Presbyterian mission schools established among them. Large areas of land have been acquired by settlers, but much of the territory is uncleared. Trade has been chiefly with Sydney and New Caledonia. On February 15, the French colonists formed a committee of defense in the French interest. The question had been pending for several years and pertained to the rival interests of the French, on the one hand, and the English or the Anglo-Australians on the other hand. In 1872 the French and British governments agreed to respect the independence of the islands. Ten years later a mixed naval commission was charged with the duty of maintaining order there. In 1906 the present system which makes of the islands a condominium or joint possession of the two countries was established. According to various reports this system worked badly and a commission was appointed in June, 1914, but the war interrupted its work and the matter was still unsettled in 1920. Both French and English publicists were demanding a solution as part of the general rearrangement upon the return of peace. The French claimed that their colony was the best of all their Pacific possessions and that its superiority to the British was undeniable. In 1918 there were 664 French to 262 Anglo-Australians and the French owned at that time over four times as much land in the islands as the English. Moreover, the greater part of the Anglo-Australian inhabitants were not colonists, but missionaries. A recent estimate showed the French at 400 and the English at 300. From the point of view of the English, the question was exclusively an Australian one, but as the result of the war the Australian prime minister, Mr. Hughes, implied that the question had ceased to be important to the Australians. Among the proposals made upon the subject was that the New Hebrides should be given to France and France in turn enter into an economic and perhaps naval accord with Australia.

NEW JERSEY. POPULATION. According to the preliminary report of the census of 1920, there were 3,155,900 residents in the State, Jan. 1, 1920, as compared with 2,537,167 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 29,672, falling off of 11.4 per cent since 1910. The following

table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acres	Produce	Bu.	Value
Corn	1920	260,000	11,440,000		\$9,724,000
	1919	260,000	10,400,000		15,912,000
Oats	1920	85,000	2,720,000		2,040,000
	1919	88,000	2,640,000		2,112,000
Wheat	1920	95,000	1,520,000		3,116,000
	1919	109,000	1,962,000		4,316,000
Rye	1920	66,000	1,155,000		1,964,000
	1919	80,000	1,280,000		2,048,000
Hay	1920	370,000	598,000		15,770,000
	1919	360,000	528,000		14,928,000
Potatoes	1920	95,000	14,820,000		18,525,000
	1919	92,000	8,832,000		14,926,000
Sw't Potatoes	1920	14,000	2,002,000		3,103,000
	1919	14,000	1,750,000		3,850,000
Cranberries	1920	9,800	122,000		1,281,000
	1919	10,200	156,000		1,248,000

• Tons. / Barrels.

LEGISLATION. A bill permitting the manufacture and sale in New Jersey of liquors containing 3.5 per cent alcohol was signed by the governor, March 2. On May 11, the legislature carried over the governor's veto, a measure authorizing a bond issue of \$28,000,000 for New Jersey's share in the building of the Delaware River bridge between Camden and Philadelphia, and the Hudson River vehicular tunnel between Jersey City and New York, subject to ratification by referendum. Among other measures may be mentioned: Authorization of issuance of corporate shares of stock without nominal or par value, the enabling of corporations to change existing capital stock into stock without par value, and in general the repeal of the 1913 amendments to the corporation law which were designed to supervise more strictly the companies taking out charters in the State; provision for retirement on half pay of judges of supreme court and court of chancery after fourteen years if seventy years of age; provision for retirement and pensions of policemen and firemen; prevention of fraud in sale of securities; making it a misdemeanor to refuse to rent house or apartment to family with children under fourteen; making "hostility" (as defined) to Federal or State government a high misdemeanor; payment of a bonus to veterans of late war or dependents, provision being made by an issue \$12,000,000 bonds; authorization of county park boards to permit Sunday baseball and other games if no admission fee is charged; prohibition of school authorities from inquiring into religious faith of teachers seeking appointment.

OFFICERS. Governor, Edward I. Edwards; Secretary of State, Thomas F. Martin; Attorney-General, Thomas F. McCran; Treasurer, William T. Read; Comptroller, Newton A. K. Bugbee; Purchasing Agent, Edward E. Grosscup; Adjutant-General, Frederick Gilkyson; Commissioner of Banking and Insurance, Frank H. Smith; Commissioner of Department of Public Reports, William A. Sweeney.

JUDICIARY. Supreme Court: Chief Justice, William S. Gummere; Justices, Thomas W. Trenchard, Charles W. Parker, James J. Bergen, James F. Minturn, Charles C. Black, Francis J. Swayze, Samuel Kalisch, Frank S. Katzenbach, Jr.

NEW JERUSALEM, CHURCH OF THE. This denomination is also known as the New Church, and was founded in 1787 in London. Its teachings are based on the Sacred Scriptures and writings of Emanuel Swedenborg, who was born in Sweden in 1688, and died in 1772. In 1792 the

first local organization was established in the United States, and in 1817 the first session of the General Convention was held. Missionary work is conducted in Germany, France, Switzerland, Italy, Austria, Denmark, Sweden, and Czechoslovakia. A theological seminary is maintained at Cambridge, Mass. Statistics for 1920 showed that there are in this denomination, 101 societies, and 6582 members. The church property was valued at approximately \$1,750,000. In 1891 a portion of this organization split off under the name of the General Church. This branch differs from the old body mainly in its attitude toward the writings of Swedenborg, which it regards as being "divinely inspired and thus the very Word of the Lord revealed at His second coming." In 1916 (the latest available statistics) there were 15 churches, 733 members, and church property valued at \$55,032. *The New Church Messenger*, is the official organ of the General Convention, and is published at 134 Bowdoin St., Boston, Mass., where national headquarters of the denomination are also maintained.

NEWLAND, H. OSMAN. British sociologist, died, June 27. He was one of the pioneers in the teaching of sociology in England, compiling the first course in that study pursued in Great Britain. He lectured extensively on sociology and English literature, and assisted in founding the Sociological Society. Among his other achievements was the introduction of the study of citizenship in the schools. He wrote, *Short History of Citizenship; The Model Citizen; Sierra Leone; Origin and System of Empire*, etc.

NEW MEXICO. POPULATION. According to the preliminary report of the census of 1920, there were 360,350 residents in the State, Jan. 1, 1920, as compared with 327,301 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 29,841, a falling off of 16.4 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	270,000	7,155,000	\$7,870,000
	1919	243,000	7,290,000	11,008,000
Oats	1920	67,000	2,278,000	1,822,000
	1919	61,000	2,196,000	2,086,000
Wheat	1920	330,000	6,375,000	8,925,000
	1919	251,000	5,344,000	10,688,000
Hay	1920	270,000	618,000	10,418,000
	1919	252,000	638,000	11,623,000
Beans	1920	121,000	811,000	2,465,000
	1919	123,000	922,000	3,411,000
Potatoes	1920	5,000	475,000	998,000
	1919	6,000	270,000	513,000
Grain S'rg'ms	1920	240,000	6,480,000	6,415,000
	1919	243,000	7,290,000	9,477,000

* Tons.

MINERAL PRODUCTION. The output of the metal mines of New Mexico for 11 months of 1920 and the estimated output for December, as reported by the United States Geological Survey, amounted to \$476,000 in gold, 762,000 ounces of silver, 2,600,000 pounds of lead, 54,000,000 pounds of copper, and 11,840,000 pounds of zinc. These preliminary figures represented a decrease from 1919 of \$175,000 for gold, 60,000 ounces of silver, and 340,000 pounds of lead, but an increase of 3,000,000 pounds of copper and 3,840,000 pounds of zinc.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 57,634; Cox (Democrat), 46,668; Farmer-Labor, 1097; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 33,527; Hughes (Republican), 31,152; Socialist, 1999. The vote for governor was: Mecham (Republican), 54,161; Hancock (Democrat), 50,535. See ANTHROPOLOGY, and EDUCATION IN THE UNITED STATES.

MANUFACTURES. Preliminary figures of the census of manufactures for the year 1919, applying to establishments conducted under the factory system showed a consistent increase over the year 1914. In the order of their importance from a percentage standpoint, the increases for the several items ranked as follows: Wages, 147 per cent; value added by manufacture, 107.1 per cent; value of products, 91.6 per cent; salaries, 77.8 per cent; cost of materials, 74.4 per cent; capital, 69.5 per cent; wage earners, 51.9 per cent; primary horsepower, 38.4 per cent; salaried employees, 16.8 per cent; number of establishments, 5.2 per cent; and proprietors and firm members, 3.4 per cent. The capital invested, as reported in 1919, showed a gain of \$6,242,000, or 69.5 per cent, over that in 1914. The average capital per establishment was approximately \$39,000 in 1919 and \$24,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$3,298,000 or 74.4 per cent. The average cost of materials per establishment in 1919 was approximately \$20,000, and in 1914 \$12,000. The value of products in 1919 showed an increase over that in 1914 of \$8,537,000, or 91.6 per cent. The average per establishment in 1919 was approximately \$46,000 and in 1914 \$25,000. The value added by manufacture in 1919 showed an increase over that in 1914 of \$5,239,000, or 107.1 per cent. The value added by manufacture in 1919 formed 56.7 per cent of the total value of products and in 1914 52.5 per cent. In 1919, as compared with 1914, the number of salaried employees shows an increase of 83, or 16.8 per cent, while the average number of wage earners increased 1960, or 51.9 per cent. A comparative summary for the State for 1914 and 1919 follows:

	Census—		Per cent. of increase, 1914-1919
	1919	1914	
Number of establishments	387	368	5.2
Persons engaged in manufactures	6,648	4,594	44.7
Proprietors and firm members	336	325	3.4
Salaried employees	576	493	16.8
Wage earners (average number)	5,736	3,776	51.9
Primary horsepower	17,260	12,468	38.4
Capital	\$15,226,000	\$8,984,000	69.5
Services	7,686,000	3,273,000	134.8
Salaries	1,026,000	577,000	77.8
Wages	6,660,000	2,696,000	147.0
Materials	7,728,000	4,430,000	74.4
Value of products	17,857,000	9,320,000	91.6
Value added by manufacture (value of products less cost of materials)	10,129,000	4,890,000	107.1

NEW SOUTH WALES. A state of the Commonwealth of Australia; situated in the southeastern part of the continent and bounded by Queensland on the north, Victoria on the south, South Australia on the west, and the Pacific Ocean on the east. Capital, Sydney, the second largest city in the southern hemisphere, being next to Buenos Aires. Area, of New South Wales, 310,372 square miles, including the Federal territory; population estimated June 30, 1919, 1,960,597, of whom 983,127 were males and 977,470 were females. Forest land covers about one-fourth of the area. Education, which is under State control is compulsory between the ages of seven and 14. In 1916 there were 3424 public schools with 289,655 pupils enrolled and 9022 teachers; private schools 698 with 73,560 pupils and 3806 teachers. Besides that there were 438 Roman Catholic denominational schools with 2281 teachers and 59,136 pupils. The State religion was abolished in 1862, but the Church of England predominates. In 1920 there were about 630 miles of government railway under construction according to the report of the railway commissioners of New South Wales, Australia, for the year ending with June, 1920. This mileage was included in 16 lines of 20 to 95 miles each, and in several instances construction work had been interrupted for two years or more on account of the war. Even in 1920 shortage of explosives, cement, ties, and other materials was delaying progress considerably. Preparatory work was under way for the electrification of the suburban lines near Sydney. Double tracking and four tracking of portions of the main lines was also in progress. Executive power is in a governor assisted by a cabinet. Governor at the beginning of 1920, Sir Walter Edward Davidson; Prime Minister, W. A. Holman. See AUSTRALIA.

NEW SYMPHONY ORCHESTRA. See MUSIC, *Orchestras*.

NEW YORK. POPULATION. According to the preliminary report of the census of 1920, there were 10,384,829 residents in the State, Jan. 1, 1920, as compared with 9,113,614 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 193,060, a falling off of 10.5 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	795,000	82,595,000	\$87,810,000
	1919	820,000	85,260,000	58,532,000
Buckwheat	1920	221,000	4,420,000	6,188,000
	1919	233,000	5,126,000	7,433,000
Oats	1920	1,150,000	44,275,000	29,664,000
	1919	1,120,000	28,560,000	23,705,000
Barley	1920	120,000	8,480,000	3,445,000
	1919	128,000	2,816,000	3,830,000
Wheat	1920	500,000	10,998,000	19,247,000
	1919	524,000	11,178,000	24,082,000
Rye	1920	107,000	1,872,000	2,958,000
	1919	120,000	1,932,000	2,898,000
Hay	1920	4,441,000	5,547,000	130,545,000
	1919	4,441,000	6,648,000	135,974,000
Beans	1920	90,000	1,260,000	4,410,000
	1919	90,000	1,305,000	6,894,000
Potatoes	1920	370,000	46,250,000	54,575,000
	1919	363,000	39,567,000	57,372,000
Hops	1920	2,200	2,288,000	1,378,000
	1919	2,300	1,587,000	1,159,000

^a Pounds. ^c Tons.

FINANCE. According to the comptroller's report at the close of the year 1920 the net State debt had been reduced \$5,094,982.03 owing to

the fact that no long term bonds had been sold and to the normal increase in the sinking funds for the redemption of the debt. The total revenue receipts available for general budget purposes were \$115,591,606.99, an increase over the previous year of \$35,757,973.14, or nearly 45 per cent. The total expenditures for general budget purposes were \$94,024,215.47 for the year, an increase of \$15,682,902.46, or 20 per cent. The general revenue receipts exceeded the expenditures for general budget purposes by \$21,567,391.52. The valuation of real and personal property as fixed by the State tax commission subject to taxation for State purposes amounted to \$12,989,433,733, an increase over the preceding year of \$231,411,779. The general budget for the current year (1920-1921) as approved by the legislature and the governor amounted to 145,219,906.60 of which \$141,885,474.39 was appropriated at the ordinary session and \$3,334,432.21 at the extraordinary session during September, 1920; and, as the estimated revenues for the year were not expected to be sufficient to meet the entire amount appropriated, it was contemplated that the balance of the budget requirements would have to be financed from the surplus treasury funds.

TRANSPORTATION. The total railway mileage of the State in 1919 was about 8500. In the counties of the Bronx, New York, Kings, Queens, and Richmond the Public Service Commission reported, Dec. 31, 1920, the number of transportation companies at 73, divided as follows: Street and electric railroad companies, 58; steam railroads, 11; baggage transfer companies, 2; stage-coach companies, 2. The street and electric railroad companies operated about 1900 miles of single track railroad, including subway, elevated and surface railroads. In the operation they used about 13,000 passenger cars. For the fiscal year ending June 30, 1920, they carried 2,364,775,067 passengers, an increase of 284,830,770 passengers, or 13.69 per cent over the previous year. Their total operating revenue for the year was \$127,880,161, an increase of more than \$17,000,000 over the previous year. Their operating and maintenance expenses were \$96,059,605, which was an increase of nearly \$22,000,000 over the previous year. The combined net corporate income for all companies showed a deficit of \$10,735,399, as against a deficit for the previous year of \$8,556,408. The increase in the deficit in the face of a large increase in operating revenue was ascribed to a greater proportionate increase in operating expenses, including large advances in the wages of employees.

In the other counties of the State there were 224 railway corporations, of which 132 were team and 92 street railways.

CHARITIES AND CORRECTIONS. The following is a list of the various State charitable and reformatory institutions with their respective populations, as of June 30, 1919, with the exception of the reformatories at Elmira and Napanoch for which the figures are for June 30, 1918:

Western House of Refuge for Women, at Albion, 184; School for the Blind, Batavia, 152; Soldiers' and Sailors' Home, Bath, 1002; Reformatory, Elmira, 726; Eastern New York Reformatory, Napanoch, 206; Training School for Girls, Hudson, 375; Custodial Asylum for Feeble-Minded Women, Newark, 988; House of Refuge, Randall's Island, 675; Custodial Asylum, Rome, 1939; Agricultural and Industrial School, Indus-

try, 715; Institution for Feeble-Minded Children, Syracuse, 638; Thomas Indian School, Iroquois, 118; Craig Colony for Epileptics, Sonyea, 1348; Woman's Relief Corps Home, Oxford, 163; Hospital for Care of Crippled and Deformed Children, West Haverstraw, 174; Hospital for Treatment of Incipient Pulmonary Tuberculosis, Raybrook, 284; Letchworth Village, Thiells, 360; Reformatory for Women, Bedford Hills, 371.

At the close of the fiscal year, June 30, 1920, there were under supervision of the State Board of Charities 248 hospitals and 215 dispensaries, a total of 463 institutions. As compared with the previous year this number represents an increase of seven hospitals and a decrease of three dispensaries. In the institutions for mental defectives and epileptics the admissions and discharges during the fiscal year and the population, June 30, 1920, were as follows: Admissions, 1773; discharges, 1465; population, June 30, 7626. The children cared for in institutions or maintained at public expense in family homes June 30, 1920, were distributed as follows:

salaries of the teachers in the public schools was passed, carrying an appropriation of \$20,500,000. Among other measures passed may be mentioned: Regulation of boxing matches and creating of State boxing commission; provision for consumers' coöperatives; provision of teachers' retirement fund; bonus to military and naval veterans of the late war, the bond issue not to exceed \$45,000,000 was authorized. Among the measures that failed to pass were: Bills for placing industrial illness under the workmen's compensation law, for a minimum-wage commission, for the application of the eight hour day to all women and minors, and other measures of social welfare. The housing situation became so acute that in April the Legislature by almost unanimous vote passed the "rent laws," the most important of which provided in chapter 136, section 1 that: "Unjust, unreasonable and oppressive agreements for the payment of rent having been and being now exacted by landlords from tenants under stress of prevailing conditions whereby the freedom of contract has been

	Delinquent children	Blind or deaf children	Other children public charges	Other children private charges	Totals
In State institutions.....	1,014	.....	258	.....	*1,272
In other public institutions.....	80	.....	70	.....	102
In private institutions.....	2,696	1,876	19,714	6,204	30,490
In boarding homes.....	9	.....	3,418	133	8,560
In homes of their own mothers.....	.....	.....	26,201	.....	26,201
Totals	3,749	1,876	49,661	6,339	61,625

* No report received of New York State School for the Blind, Batavia.

A bill passed in 1920 created a commission to examine laws relating to child welfare, investigate their effect and propose remedial legislation in relation thereto.

LEGISLATION. During the first part of the year interest centered in the proceedings against the Socialists in the New York legislature. Immediately after the session was opened, the five Socialist members were ordered before the bar of the Assembly (January 7) and charged with belonging to a party disloyal to the government and being elected on a platform hostile to the interest of the State and of the country. A resolution referring the question of their exclusion to a judiciary committee, to be appointed by the speaker, was passed without debate. The committee decided at the end of March, in favor of expulsion and it was then too late to hold an election to fill the vacancies. The report of the committee was approved in the case of three of the Socialists by a vote of 116 to 28 and in the case of the other two by a vote of 104 to 40. The State Reconstruction Commissions' proposals for an executive budget, for the lengthening of the governor's term, and for the reconstruction of scattered administrative boards were rejected, but other amendments tending to the same end in the matter of the administrative departments were approved. An amendment for a legislative budget was approved. The bill defining intoxicating liquors as those which contain 2.75 per cent alcohol was passed. The three sedition bills introduced by the Lusk committee were vetoed by the governor and so were bills making Socialists ineligible for political office, and for making members of other parties ineligible, if the courts decided that the government was endangered by their principles. A bill providing for a considerable increase in the

impaired and congested housing conditions resulting therefrom have seriously affected and endangered the public welfare, health and morals in certain cities of the State, and a public emergency existing in the judgment of the legislature by reason thereof, it shall be a defense to an action for rent accruing under an agreement for premises in a city of the first class or in a city in a county adjoining a city of the first class occupied for dwelling purposes, other than a room or rooms in a hotel, lodging house or rooming house, that such rent is unjust and unreasonable and that the agreement under which the same is sought to be recovered is oppressive." The law declared that an increase of rent by more than 25 per cent over the year before was presumptively unreasonable. According to the report of the legislative committee on housing, the 1920 rent laws were generally successful in preventing evictions, but partially failed to stop exorbitant increases of rent.

ELECTION. The vote in the presidential election of 1920 was: Harding (Republican), 1,868,240; Cox (Democrat), 781,485; Debs (Socialist), 203,400; Watkins (Prohibitionist), 23,612; Christensen (Farmer-Labor), 18,787; Cox (Socialist Labor), 4358; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 869,066; Wilson (Democrat), 759,426; Benson (Socialist), 45,944; Hanly (Prohibitionist), 19,031; Hughes (Amer.), 10,172; Reimer (Socialist Labor), 2666. The vote for governor was: Miller (Republican), 1,335,617; Smith (Democrat), 1,261,729; Cannon (Socialist), 171,907; Malone (Farmer-Labor), 49,953; Thompson (Prohibitionist), 16,978; Quinn (Socialist Labor), 4641; and the vote for United States Senator: James W. Wadsworth, Jr. (Republican), 1,431,347;

Harry C. Walker (Democrat), 885,061; Ella A. Boole (Prohibitionist), 159,477; Jacob Panken (Socialist), 151,247; Rose Schneiderman (Farmer-Labor), 15,086; Harry Carlson (Socialist Labor), 6522.

The referendum proposal in respect to the soldiers' bonus was passed by a large majority. This called for the authorization of bonds to the amount of \$45,000,000, redeemable in twenty-five yearly installments, for the payment of bonuses to soldiers and sailors of the late war; each bonus not to exceed \$250; \$10 to be given for each month of service if length of service exceeds two months. There was also a favorable vote on each of the following amendments to the State constitution: State authorized to issue bonds in anticipation of revenues; contracting of certain debts prohibited till authorized at a general election; provision for sinking fund on debts already incurred; popular vote of approval required of debts incurred for highway building.

OFFICERS. Governor, Nathan L. Miller, Rep.; Lieutenant-Governor, Jeremiah Wood, Rep.; Secretary of State, John J. Lyons, Rep.; Comptroller, James A. Wendell, Rep.; Treasurer, N. M. Marshall, Rep.; Attorney-General, Charles D. Newton, Rep.; Engineer and Surveyor, Frank M. Williams; Commissioner of Education; Superintendent of Insurance, Jesse S. Phillips, Rep.; Adjutant-General, Colonel J. Lester Kinkaid.

JUDICIARY. Court of Appeals: Chief Judge, Frank H. Hiscock; Associate Judges, E. A. Chase, Frederick Collins, J. W. Hogan, B. N. Cardozo, C. W. Pound, C. B. McLaughlin, F. E. Crane, W. S. Andrews. See **EDUCATION IN THE UNITED STATES.**

NEW YORK BARGE CANAL. See **CANALS.**

NEW YORK CITY. See **CITY PLANNING; MUNICIPAL OWNERSHIP; RAPID TRANSIT; ROADS AND PAVEMENTS.**

NEW YORK SYMPHONY ORCHESTRA. See **MUSIC, Orchestras and Novelties.**

NEW YORK UNIVERSITY. A non-sectarian State institution of the higher learning in New York City; founded in 1830. Including the summer school, there were 10,522 students enrolled for 1920. There were 541 members in the faculty. The funds for the year amounted to \$2,139,069.91. The library contained 153,766 volumes. The 90 Trinity Place building which was purchased for the Wall St. Division in December, 1919, was ready for occupancy and the Graduate School of Business Administration was created. The engineering building at University Heights was partly completed. The most recent gift was that of Jacob H. Schiff's bequest of \$50,000 to the School of Commerce. President, Elmer Ellsworth Brown, Ph.D., LL.D.

NEW ZEALAND, DOMINION OF. A self-governing British dependency in the south Pacific, comprising three larger islands and several smaller ones. Capital, Wellington.

AREA AND POPULATION. The length of the group of islands is 1000 miles and the greatest breadth, 180 miles. It includes the two large islands known respectively as North and South islands and the smaller Stewart island along with a number of still smaller ones, including the Cook islands, annexed in 1901 and various small islands in the Pacific Ocean. Area of North Island, 44,130 square miles; South Island, 58,120; Stewart, 662; total, 103,581. Other esti-

mates place it higher, 104,751 square miles. It has a coastline of 4330 miles. Total population, at the census of October 15, 1916, 1,099,449. An estimate of 1920 placed it at slightly under 1,200,000. The largest cities with their population on Oct. 15, 1916, are: Auckland, 133,712 (estimated in 1920 at 135,000); Wellington, 95,235; Christchurch, 92,733; Dunedin, 68,716. In 1918 the immigrants numbered 11,906 and the emigrants, 11,606. The deaths in that year numbered 16,364 (above the average on account of the influenza epidemic); births, 25,860; and marriages, 6227.

EDUCATION. Illiteracy is rare. In 1916, 95 per cent of the population over five years of age, were reported at the census as able to read and write. At the end of 1917 the public primary schools numbered 2368 with 5766 teachers and 190,354 pupils enrolled, and there were 34 secondary schools with 349 teachers and 7590 pupils. There were also 60 district high schools and eight technical high schools. The university is simply an examining body, but there are four affiliated colleges as follows: The Otago University at Dunedin; Canterbury College at Christchurch; Auckland University at Auckland, and Victoria University at Wellington. The graduates admitted for examination to the university of New Zealand in 1918 numbered 2317. The following information in respect to production, commerce, finance, etc., was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920:

PRODUCTION. The season of 1919 was far below normal so far as agricultural interests were concerned. The exceptionally severe winter and the late spring, followed by a very severe drought, seriously affected the crops, especially wheat and oats. The acreage was greatly decreased, and the estimated yield of wheat is only 4,100,000 bushels, compared with the actual yield of 6,567,629 bushels for the season 1918-19. The estimated yield of oats was 5,575,000 bushels, compared with the actual yield of 6,884,609 bushels for the previous season. (See **AGRICULTURE.**) Nor was the year a very profitable one for the fruit growers. The season was late and the yield below normal. The quality was below the average for most kinds of fruit, especially for stone fruit. The fruit industry of the dominion is on the increase, and is quite well scattered over the country. The principal centres are at Auckland, Nelson, and Otago, where there is a majority of the 13,865 acres of the non-bearing fruit trees, and 12,689 acres of the bearing fruit trees of the country. According to figures given out by the Director of Horticulture, there were more than \$40,000,000 invested in orchards, orchard plants, and fruit canneries. At the close of the year 1919 there were 363,188 horses in the Dominion compared with 378,050 the year before; 3,350,274 cattle, compared with 2,869,467 at the end of 1918; 25,828,554 sheep, compared with 26,538,302 at the end of the previous year, and 235,347 pigs, compared with 258,694 at the end of 1918. Notwithstanding the loss in the number of sheep, horses, and pigs in the country, there was a large gain in the number of cattle, and with the increased value of all kinds of stock, the stock raisers were in a much better position than at the beginning of the year. The New Zealand wool clip for 1919-20 was somewhat short of the average clip of the dominion, but the quality was considered above an average. The returns

for the 1918-19 season showed a gain over 1917-18. During the 1918-19 season, the weight per bale was slightly less than an average with a small increase in the average price. At the average price, the total value of the clip would be \$63,483,443, compared with \$57,701,005 for the 1917-18 clip. During the 1918-19 season, the New Zealand woolen mills took 18,821 bales, compared with 20,692 bales during the 1917-18 season. The total quantity of wool acquired in the dominion for the British government from the commencement of the government wool commandeering, Dec. 21, 1916, to Dec. 31, 1919, amounted to 1,925,367 bales, for which the British government paid \$220,722,424. Of this quantity, France took 49,207 bales, the United States 44,373, and Canada 21,738.

The farmers' coöperative associations in New Zealand have steadily developed until they are now important factors in the business life of the dominion, and are very rapidly gaining in strength. These associations have taken up different lines of development and trade and formed plans for building and operating their own flour mills, establishing hydroelectric plants for the benefit of members of the association, as well as using their influence for better roads throughout the dominion. They are also interested in fertilizer and cement plants, and, in the aggregate, control a large portion of the business of the country.

Soldiers bought 217,484 acres of land in 1919, compared with 86,720 acres during 1918, while other interests purchased 963,439 acres, compared with 755,025 acres for 1918. During the preceding five years, 5,008,225 acres were taken over for cultivation. Discharged soldiers pur-

animals would have been more marked had it not been that numbers were trapped for export and canning purposes, as well as for the sale of the skins, which became quite an important item in the exports of the country. The exports of rabbit skins during 1919 amounted to 2,437,693 pounds, valued at \$3,734,289, compared with 1,359,290 pounds, valued at \$1,458,806 for 1918. Very high prices ruled for rabbit skins in New Zealand during the closing weeks of 1919. Enormous numbers of rabbits were destroyed by trapping, but the greater number by poisoned phosphorized pollard or oats and the use of strychnine, distributed along the rabbit runs. Wire netting was used as a protection in other cases, and according to an amendment to the Rabbit Pest act it became compulsory for adjoining property owners to join in the payment of dividing-line fences.

COMMERCE. The foreign trade of the dominion more than doubled after 1913. American interests fared exceptionally well in the general increases. New Zealand's foreign trade for 1919 amounted to \$408,873,304, of which \$149,290,584 was for imports and \$259,582,720 for exports, compared with a total foreign trade of \$256,500,761 for 1918, and \$255,573,064 for 1917. The balance of trade in favor of New Zealand was \$110,292,136, compared with \$20,631,785 for 1918, \$51,965,858 for 1917, and \$33,810,758 for 1916, making a total foreign trade balance for the four years of \$216,700,537, or nearly \$200 per capita, for a country with a population of less than 1,200,000. The following table gives the foreign commerce of New Zealand by countries, including specie save when otherwise indicated, for 1914, 1916, 1918, and 1919:

Countries	1914	1916	1918*	1919*
IMPORTS FROM				
United Kingdom	\$58,829,606	\$67,495,703	\$43,690,100	\$57,616,587
Canada	2,331,785	3,685,333	4,530,536	7,894,600
Australia	3,376,371	19,476,565	24,981,618	24,731,390
Belgium	537,218	21,072	10	.....
France	718,670	551,628	164,405	200,124
Germany	1,997,572	20,863	1,868	102
Italy	269,190	503,615	278,969	366,760
Netherlands	618,230	344,840	113,264	2,130
Sweden	388,429	500,081	340,013	437,103
China	159,646	336,392	561,419	512,148
Japan	912,473	2,739,712	5,912,140	6,122,136
Philippine Islands	107,121	152,176	173,003	158,007
United States	11,110,054	19,319,639	24,238,831	36,870,130
All other countries	25,506,376	13,032,502	12,948,312	14,852,588
Total	\$106,362,691	\$128,180,121	\$117,984,488	\$149,268,805
EXPORTS TO				
United Kingdom	\$104,064,705	\$130,762,797	\$88,784,304	\$215,158,782
Canada	2,898,541	3,367,550	8,728,437	4,770,093
Australia	9,384,607	10,665,066	8,572,937	8,372,932
Belgium	7,582	10	5	.....
France	1,104,827	1,485,952	3,941,899	479,558
Germany	2,219,917	24	.....	.....
Italy	4,417	161	228	344,548
Netherlands	8,645	5	.....	166
Sweden	2,915	44	5	53
China	818	818	1,630	159,498
Japan	289,596	535,533	26,352	39,797
Philippine Islands	151	10	10	.....
United States	5,008,025	12,136,988	19,688,144	20,443,490
All other countries	2,824,725	3,035,926	8,822,827	9,814,680
Total	\$127,809,476	\$161,990,879	\$138,566,273	\$259,588,592

* 1918 figures include specie exported other than gold specie.

* 1919 figures include gold bullion and specie for the last six months only.

chased 76,702 acres in December, 1919. The New Zealand government was assisting discharged soldiers as far as possible to go on the land, and meeting with very good results.

The increase of the rabbit pest in New Zealand during the war period is accounted for principally by the scarcity of labor. The increase of these

COMMUNICATIONS. Railways open for traffic according to the latest statistics available in 1920 had a mileage of 3012, of which the State owned 2983. The oversea shipping in 1919 showed a tonnage of 1,480,883 entered and 1,505,256 cleared, and the coastwise shipping, 7,366,129 entered and 7,357,874 cleared.

There was but little increase in railway building in 1919 on account of the shortage of labor. Only 13 miles of new railway opened for public use during the year 1919. Notwithstanding this fact, considerable work was done on new lines and railway tunnels, that will open up many miles of railway as soon as they are completed. There is a strong demand in New Zealand for a great increase in railroad development, which will doubtless result in extensive construction as soon as sufficient labor can be secured. At the end of 1919 all workmen that could be spared from other government work and could be secured from other sources were put to work on the railroad extensions then under construction, and there was still a demand for 2000 or 3000 more men. At the close of 1919 there were in operation in New Zealand 2996 miles of government railway, over which 11,725,645 passengers and 5,613,739 tons of freight were carried, yielding a revenue of \$24,277,177, with an expenditure of \$14,787,079, compared with 2983 miles at the close of 1918, over which 11,730,643 passengers and 5,742,968 tons of freight were carried, giving a revenue of \$22,812,692, with an expenditure of \$16,647,839 for the year. During the first six months of 1919, the railroad traffic was greatly handicapped for lack of crews to man the trains. It was near the close of the year before the government was able to reestablish the full train service. The holiday travel, beginning the latter part of December, was far in excess of any other similar period. Parliament enacted a law authorizing the organization of companies for the construction of private railway lines as feeders to the government main lines. After this enactment, several companies were formed for the purpose of constructing such lines. One line was to be constructed from Awamutu to Putaruru on the main trunk line, between Auckland and Wellington, a distance of about 30 miles, and another was to be constructed in the Waikato Valley to assist in the development of that extensive dairying and agricultural district. These companies were to be authorized by the New Zealand government to raise loans to cover the cost of construction with the understanding that the roads could be taken over by the government at a later date, should that plan seem advisable. It was expected that these private railways would greatly assist in the development of certain sections of the dominion.

FINANCE. Figures made public by the New Zealand Ministry of Finance showed, for the fiscal year ended March 31, 1920, an excess of revenue over expenditure of £2,299,415 (at normal exchange the pound sterling is equivalent to \$4.8665), contrasted with a surplus of £3,678,773, in 1918-19, and £5,085,933, in 1917-18. The totals for these three years were:

	1917-18	1918-19	1919-20
Revenue	£20,206,222	£22,352,372	£26,081,340
Expenditure	15,120,289	18,673,599	23,781,925
Excess revenue	£5,085,933	£3,678,773	£2,299,415

There was no decline in revenue during the period under review, the diminishing balance being due wholly to the greater proportionate increase in expenditures. The various items of revenue for the past three years are thus given in the *New Zealand Trade Review and Price Current*:

Revenues	1917-18	1918-19	1919-20
Customs	£3,864,308	£3,830,681	£4,830,324
Stamp and death duties	1,892,014	2,124,772	3,344,933
Postal and telegraph	1,836,256	1,964,812	2,096,756
Land tax	1,365,708	1,512,693	1,557,993
Income tax	5,619,561	6,219,336	6,869,765
Beer duty	237,075	273,334	355,403
Railways	4,668,223	4,975,445	5,766,015
Registration, etc., fees	101,249	111,993	175,755
Marine	38,053	35,151	42,646
Miscellaneous	718,437	946,669	1,204,865
Territorial	205,643	202,734	215,757
Nat'l endowment	100,493	108,824	112,884
Other receipts	39,202	45,928	8,334
Total	£20,206,222	£22,352,372	£26,081,340

New Zealand's revenue in 1919-20 was £3,728,968 more than in 1918-19 and £5,875,118 more than in 1917-18. As the foregoing figures show, all the principal classes shared in the increase though the bulk of it was in customs, stamps, and railways. Expenditures in 1919-20 exceeded those for 1918-19 under all the principal headings save one—land and survey. The aggregate for 1919-20 was £5,108,326 more than in the preceding twelvemonth and £8,661,636 more than in 1917-18. The chief items of outlay during these three years were:

Expenditure	1917-18	1918-19	1919-20
Interest and sinking fund	£4,430,779	£6,086,769	£7,249,426
Other permanent charges	2,238,031	3,132,081	4,140,035
Railways	3,067,658	3,415,595	4,305,965
Post and telegraph	1,487,145	1,699,701	1,941,493
Education	1,511,256	1,602,995	2,031,824
Justice	485,428	549,794	587,989
Defense	428,112	416,427	502,465
Health and mental hospitals	225,701	318,808	(*)
Internal affairs	249,747	271,218	336,356
Agriculture	224,565	240,465	818,566
Land and survey	139,832	209,403	68,364
Other expenditures	612,035	730,343	799,442
Total	£15,120,289	£18,673,599	£23,781,925

* Not shown in available data.

GOVERNMENT. Executive power is in the governor-general, and legislative power in the governor-general and a general assembly of two chambers, namely, a legislative council and a house of representatives. A recent bill changed the legislative council from an appointive to an elective body. The house of representatives consisting of 80 members is elected by popular vote for three years. The distribution of seats by parties after the general election of 1919 was: Reform party, 48; Liberals, 18; Labor party, 10; Independents, 4; government seats 50 and the opposition, 30. Governor-general and commander-in-chief, Admiral Jellicoe (Viscount Scapa); Prime Minister, W. F. Massey. (See **AQUEDUCTS; NAVAL PROGRESS**).

NIAGARA FALLS, N. Y. See **CITY PLANNING**.

NICARAGUA. The largest of the six Central American republics. Capital, Managua.

AREA AND POPULATION. The estimated area is 49,552 square miles, but it is generally placed at the lower figure of 49,200. The population, which is largely mestizo and Indian was estimated Dec. 31, 1911, at 746,000 as against 689,891, Dec. 31, 1913, which would place it fourth among the Central American states in respect to population. Fully three-fourths of the people live in the

western half of the country. The chief towns with their estimated population are Leon, formerly the capital, 73,520; Managua, the capital, 41,538 (another estimate 48,367); and Granada, 20,133 (another estimate 25,000).

EDUCATION. Education is free and compulsory. There are three universities, namely, Managua (the Central University), Leon (the Western and Northern University), and Granada (the Western and Northern University). No later figures for schools were available than those given in preceding YEAR BOOKS which showed about 356 elementary schools and about 10 secondary schools. The state supports also a number of normal schools. There is an industrial, commercial, and scientific museum at Managua.

PRODUCTION AND COMMERCE. Agricultural resources are remarkably rich, but largely undeveloped. Wide stretches of arid land still remain uncultivated and there are large tracts of virgin forests abounding in mahogany and other cabinet woods, and dyewoods. The chief occupations are the cultivation of coffee and the raising of cattle. Cacao, sugar cane, bananas, corn, rice, tobacco, and rubber are also produced. The cultivation of sugar is encouraged by the government and offers other advantages, especially easy means of transport. Good grades of coffee are produced and the industry was stimulated in 1920 by the resumption of shipments to France through a treaty allowing the entry of coffee under reduced rates. Before the war France had been the best market. The mining of gold which is carried on by British and Americans is also of some importance.

In 1919 the foreign trade was the largest in respect to both exports and imports in the history of the country; the value of the imports exceeded that of 1918 by 33 per cent and of the exports by 60 per cent. This was due chiefly to the large crop of coffee and its high price. The other chief products exported were gold, mahogany, bananas, sugar, and hides. An increase of imports naturally followed the increase of exports but was also caused by the necessity of replenishing stocks depleted by the years of war. There was an increase of all manufactured articles with the exception of those in iron, steel, and leather. The proportion of imports from the United States which supplied 84 per cent of the total was larger than in any previous year. In 1914 only 62 per cent had come from the United States. The following information in regard to commerce and finance was supplied by the United States Bureau of Foreign and Domestic Commerce: The value of the imports into Nicaragua, by countries of origin, for the year 1919 and a comparison with 1913 and 1918 are given in the following table:

Countries of origin	1913	1918	1919
Great Britain	\$1,150,611	\$596,809	\$689,721
France	400,776	154,324	146,330
Italy	144,361	16,680	38,838
Spain	55,883	7,989	33,190
Germany	619,212	827	24
Other European countries ..	36,149	7,134	9,212
United States	3,244,008	4,630,057	6,687,712
Panama .....	.....	138,559	147,613
Guatemala	798	9,661	5,449
Honduras	141	4,787	26,575
Costa Rica	3,234	65,472	29,905
Salvador	13,203	35,704	32,992
Mexico .....	.....	.....	30,471
West Indies .....	.....	8,413	8,516
Chile .....	.....	139,789	.....

Countries of origin	1913	1918	1919
Other American countries ...	28,471	112,764	3,771
China	67,932	3	3,572
Japan	5,227	3	512
India .....	.....	.....	23,250
Total	\$5,770,006	\$5,929,803	\$7,912,653

The United States lost its overwhelming position as the principal consumer of Nicaraguan products in 1919, principally owing to the resumption of the coffee trade with France. In 1914 the United States consumed 49 per cent of the Nicaraguan products and France 23 per cent, and in previous years an average of about 40 per cent went to the United States. In 1918 the United States took 83 per cent and France nothing, whereas in 1919 the figures reverted more closely to pre-war proportions, the United States taking 62 per cent and France 28 per cent. Although the United States still held double the proportion it held before the war, it must be noted that Great Britain used to take an average of 13 per cent, as against 4 per cent in 1919, and Germany used to take about 20 per cent.

The value of the exports shipped to the various countries participating in this trade in 1913, 1918, and 1919 was as follows:

Countries of destination	1913	1918	1919
France	\$1,763,186	.....	\$3,531,163
Great Britain	998,564	\$2,000	437,513
Italy	98,169	2,400	990
Spain	2,759	40,637	6,103
Germany	1,887,698	.....	.....
Other European countries ..	118,451	.....	16,425
United States	2,722,385	6,412,921	7,663,827
Guatemala	17,386	36,653	12,101
Honduras	45,436	4,195	67,365
Costa Rica	7,542	23,700	54,026
Salvador	24,050	50,821	153,978
West Indies .....	.....	4,920	3,271
Canada .....	.....	79,850	22,440
Panama .....	.....	90,143	146,848
Mexico .....	.....	965,977	277,197
Other American countries ...	25,176	40,724	13,226
China	1,245	.....	.....
Total	\$7,712,047	\$7,754,941	\$12,409,473

RAILWAYS. An important new railway projected for Nicaragua on which construction was about to be started in 1920 was planned to run from Chinandega to Plaza Grande, Peninsula of Cosiguina, in the Gulf of Fonseca, a distance of some 30 miles. A branch line 20 miles in length was to be constructed from it, at a point beyond El Tempisque to the Honduras frontier in the Department of Choluteca.

This new line was to be part of the system known as the "International Railways of Central America" and connect later with the section to be constructed by Honduras in the departments of Valle and Choluteca, between the Salvadorean and Nicaraguan frontiers, or the Pan-American Railway. This proposed railway to Plaza Grande and its branches it was expected would considerably facilitate intercourse between the three republics bordering on the Gulf of Fonseca and be an important element in the Pan-American Railway eventually to be built.

FINANCE. According to British sources, the revenue in 1918-19 was £598,547; and the expenditure, £424,167; total debt Jan. 1, 1919, £1,174,956. The following information in regard to

the financial situation at the beginning of 1920 was supplied by the United States Bureau of Foreign and Domestic Commerce: The financial plan of 1917 provided for a budget of expenditures and for financing the deferred interest and deferred sinking fund obligations of which payment had been postponed on account of war conditions. The control of expenditure by a budget was so successful that for the first time in many years there was a surplus at the close of each year. In 1920 the finances were reported to be in such condition that the debt (between \$8,000,000 and \$9,000,000) could readily be amortized and the interest regularly paid. In view of the improved credit of the government a new loan was authorized for a railway to the Atlantic Coast and the purchase of the majority stock of the Pacific Railway, and a mission having been sent to New York in September, 1920, the loan was effected with a group of New York bankers before the end of the year.

GOVERNMENT. The constitution as modified came into effect in 1913. The executive power is in a president who acts through a council of responsible ministers and legislative power is in a congress of two houses: a Senate of 13 Senators, elected for six years, and a House of Deputies of 40 members elected for four years. President, in 1920, Gen. Emiliano Chamorro, reelected October 3, and inaugurated December 31. See GUATEMALA.

NICASTRO, OSCAR. See *MUSIC, Artists, Instrumentalists.*

NICKEL. In 1920 the world's production of nickel, 85 per cent of which is derived from the Sudbury district of Ontario, Canada, and most of the remainder from New Caledonia, was on a reduced basis following the great output for the war. In 1918 the ore raised at Sudbury amounted to 1,643,040 tons and in this the nickel was estimated at 45,886 tons and the copper at 23,843 tons. In 1919 the ore produced fell off from this maximum to 614,955 tons and in 1920 the various plants sought to work on a pre-war basis and the ore raised amounted to about 1,100,000 tons of which 1,000,000 tons were smelted into matte representing about 28,000 tons of nickel and 14,500 tons of copper. The New Caledonia deposits idle during the war were again operated in 1920, while in the Province of Manitoba at the Bear and Oiseau runs deposits of ore of the Sudbury type were located during the year.

In the production of nickel from the Ontario ores the International Nickel Co. of Canada, Ltd., and the Mond Nickel Co., Ltd., for many years were the sole occupants of the field. During the year the new smelter of the British American Nickel Corporation, Ltd., at Nickelton, Ontario, referred to in the *YEAR BOOK* for 1919, came into production, to handle the ore from the old Murray mine, which was found to contain large reserves of ore. In addition to the smelting works at the mine, it had erected a refinery at Deschenes, Quebec, where a sufficient supply of electric power was available. This made two nickel-refining plants in Canada. See *METALLURGY.*

NIGERIA, COLONY AND PROTECTORATE OF. A British possession in West Africa consisting of various areas which were formerly under separate administration and had been combined into the two protectorates of Northern and Southern Nigeria, which in turn united on Jan. 1, 1914, into the colony and protectorate of Nigeria. The seat of government is Lagos. After Jan. 1, 1914,

the boundaries of the colony were defined anew and the protectorate was divided into the northern and southern provinces. Total area about 332,000 square miles (northern province, 256,000 square miles; southern province, 76,000 square miles); colony about 1400 square miles. Total population about 16,750,000. In the northern provinces the government schools in Nigeria numbered 15 and there were besides 107 unassisted private schools, the average attendance of both being about 3335. The number of Mohammedan schools was over 26,000 with over 220,000 pupils. In the southern provinces in 1918 the government schools numbered 44 with 4791 pupils; the assisted schools numbered 189 with 26,300 and unassisted 1422 with about 51,000. The chief products are palm oil and palm kernels, and various fats, meal, soap, etc., obtained from the raw products of the oil palm. There is a considerable production of hides and skins. Tobacco is also grown. Rich deposits of tin ore have been discovered and iron ore and tin are worked. In 1919 the first year after the cessation of hostilities, trade was carried on under difficulties. Nevertheless, the oversea trade was more than 40 per cent greater than in 1918. The 1919 figures were as follows: Exports, \$71,657,908; imports, \$58,507,256. The principal imports in respect to value were cotton piece goods; cooper's stores; salt; bags and sacks; and tobacco. The chief exports in respect to value were: Palm kernels and palm oil; tin ore; and cocoa-beans. In 1919 the United Kingdom and its possessions contributed 86.61 per cent of the imports and received 85.26 per cent of the exports. The percentages for the United States were respectively 12.59 and 11.52. The revenue for 1918 was £8,470,593; expenditure £3,459,774. The shipping entered and cleared in 1917 had a tonnage of 805,981 of which 777,248 was British, a considerable falling off from the preceding year. In 1918 there were 1110 miles of railway open for traffic. Both the colony and the protectorate have been under an executive council since Jan. 1, 1914. In addition to this, there is an advisory and deliberative body called the Nigerian Council, composed of the governor and members of the executive council and others. Governor at the beginning of 1920, Sir Hugh Clifford.

NITROGEN FIXATION FOR FERTILIZER. See *FERTILIZERS.*

NOBEL PRIZE. Some of the prizes in 1920 were for the previous year, the award having been delayed. Prizes for 1919 awarded in 1920 were: Medicine, Dr. Jules Bordet, of Brussels, a pupil of Pasteur and celebrated as an expert in toxicology; Chemistry, Professor Asihon of the University of Helsingfors, Finland, who had made important inventions in artificial rubber; Literature, Karl Spitteler, essay writer of Lucerne, Switzerland; Peace, Léon Bourgeois, President of the French Association for the League of Nations. The prizes of 1920 awarded before the close of the year were: Medicine, Professor August Krogh, celebrated oceanographer of Copenhagen, Denmark; Theodore Knut Hamsun, novelist of Norway; Physics, Charles Edward Guillaume, head of the International Bureau of Weights and Measures, expert in alloys and discoverer of nickel-steel compound; Peace, Woodrow Wilson. The Peace prize which like the others amounted to about \$40,000, is awarded by a committee of five elected by the lower house of the Swedish parliament. Mr. Wilson was the



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Literature



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PROFESSOR CHARLES EDWARD GUILLAUME
Physics



© *Clinedinst*
WOODROW WILSON



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M. LEON BOURGEOIS
President of the French Senate

FOUR NOBEL PRIZE WINNERS, 1920

20

third American to receive this price, the others being Theodore Roosevelt (1906), and Elihu Root (1912). The Peace prizes were bestowed on M. Bourgeois and the representative of President Wilson at a meeting of the Storthing at Christiania, December 10.

NOBLE, HARRIET I. American gynecologist, died at Brooklyn, N. Y., Oct. 10, 1920. She was born at Davenport, Iowa, in 1859, and graduated at the Woman's Medical College in Philadelphia, where she became head demonstrator of anatomy and curator of the college museum. Previous to her death she had been a specialist in gynecological department of the post-graduate hospital.

NON-PARTISAN LEAGUE. See **NORTH DAKOTA.**

NORRIS, TRUE LIVINGSTON. Editor, died, December 4. He was born at Manchester, N. H., May 4, 1848; served in the Civil War as a private in the Massachusetts Volunteers; was admitted to the bar in 1868, and practiced at Boston, Washington, and Concord, N. H. He then went into newspaper work and was first on the staff of the *New York Herald*, 1883-5; then on the *Boston Globe*, 1885-8, of which after 1888 he was the editor. After 1893 he was the proprietor of the *Portsmouth (N. H.) Times* and the *States and the Union*. He was delegate to the Democratic National Conventions of 1900 and 1904.

NORTH CAROLINA. POPULATION. According to the preliminary report of the census of 1920, there were 2,559,123 residents in the State, Jan. 1, 1920, as compared with 2,206,287 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 269,740, an increase of 6.3 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	2,784,000	64,032,000	\$72,356,000
	1919	2,800,000	53,200,000	98,420,000
Oats	1920	180,000	3,960,000	8,802,000
	1919	198,000	3,907,000	3,505,000
Wheat ...	1920	724,000	8,471,000	17,789,000
	1919	768,000	6,067,000	14,136,000
Rye	1920	96,000	912,000	1,738,000
	1919	99,000	861,000	1,850,000
Tobacco ..	1920	582,000	*384,120	97,182,000
	1919	528,000	*325,248	174,333,000
Hay	1920	918,000	*1,333,000	30,558,000
	1919	820,000	*1,140,000	27,504,000
Peanuts ..	1920	113,000	3,955,000	5,418,000
	1919	116,000	4,756,000	11,605,000
Potatoes ..	1920	56,000	5,040,000	7,157,000
	1919	62,000	4,898,000	7,984,000
S. Potatoes	1920	101,000	10,605,000	12,090,000
	1919	104,000	9,880,000	13,634,000
Cowpeas .	1920	202,000	2,343,000	6,022,000
	1919	212,000	1,814,000	3,548,000
S'rg'm S'p	1920	37,000	*3,700,000	8,700,000
	1919	39,000	*3,666,000	3,703,000
Cotton ...	1920	1,518,000	*840,000	60,900,000
	1919	1,490,000	*830,000	146,282,000
Soy Beans	1920	91,000	1,638,000	4,554,000
	1919	96,000	1,373,000	4,256,000

* Pounds. * Bales. * Tons. * Gallons.

CHARITIES AND CORRECTIONS. The State charitable institutions with situation, and number of inmates in 1920 are: Central Hospital for the Insane, Raleigh, 1416 (number of patients treated, 1919-20); State Hospital, Morgantown, 1330; State Hospital, Goldsboro, 1000; Sanatorium for the Treatment of Tuberculosis, Sanatorium, 130; Orthopaedic Hospital, Gastonia; Oxford Orphan Asylum, Oxford, 376 (1918); Orphanage for the Colored Race, Oxford, 185; Soldiers' Home,

Raleigh, 150; Confederate Women's Home, Fayetteville. The State prison is at Raleigh; number of inmates, 825.

ELECTIONS. The vote in the presidential election of 1920 was: Cox (Democrat), 305,447; Harding (Republican), 232,848; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 168,383; Hughes (Republican), 120,890. The vote for governor was: Cameron Morrison (Democrat), 308,151; John J. Parker (Republican), 230,175; and for United States Senator: Lee S. Overman (Democrat), 310,504; A. E. Holton (Republican), 229,343.

OFFICERS. Governor, Cameron Morrison; Lieutenant-Governor, W. B. Cooper; Secretary of State, J. Bryan Grimes; Auditor, Baxter Durham; Treasurer, Benjamin R. Lacy; Superintendent of Public Instruction, E. C. Brooks; Attorney-General, James D. Manning.

JUDICIARY. Supreme Court: Chief Justice, Walter Clark; Associate Justices, Platt D. Walker, William A. Hoke, William R. Allen, W. P. Stacy. See **EDUCATION IN THE UNITED STATES.**

NORTH CAROLINA. UNIVERSITY OF. A non-sectarian, co-educational institution at Chapel Hill, N. C., founded in 1795. The students for the summer session of 1920 numbered 1146, and for the regular fall session, 1470. There were 106 members on the teaching staff, including 9 additions. The income for the year was \$715,878. There were 93,914 volumes in the library. There were various gifts of unusual sort given for the establishment of loan funds for the assistance of needy students. A collection of 1300 volumes from the shelves of the late Dr. K. P. Battle was the gift of the heirs to the university. Through the generosity of the General Educational Board \$40,000 was appropriated for the purpose of increasing the salaries of members of the teaching force. The new Steele Dormitory was nearing completion. Phillips Hall was completed and was occupied by the department of Physics, Engineering and Mathematics. President, Harry Woodburn Chase, Ph.D., LL.D.

NORTH DAKOTA. POPULATION. According to the preliminary report of the census of 1920, there were 645,680 residents in the State, Jan. 1, 1920, as compared with 577,056 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 77,693, an increase of 4.5 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	711,000	17,064,000	\$12,286,000
	1919	508,000	16,764,000	23,470,000
Oats	1920	2,485,000	59,640,000	20,874,000
	1919	2,280,000	35,340,000	23,678,000
Barley ...	1920	1,260,000	22,680,000	12,701,000
	1919	1,200,000	13,800,000	14,904,000
Wheat ...	1920	7,600,000	68,400,000	88,920,000
	1919	8,000,000	55,200,000	133,032,000
Flaxseed .	1920	785,000	3,896,000	6,935,000
	1919	700,000	3,220,000	14,200,000
Rye	1920	934,000	9,340,000	11,115,000
	1919	1,945,000	15,560,000	18,828,000
Hay	1920	2,767,000	*2,946,000	32,449,000
	1919	2,744,000	*3,278,000	51,517,000
Potatoes ..	1920	90,000	7,110,000	6,968,000
	1919	95,000	5,985,000	9,576,000

* Tons.

MANUFACTURES. A preliminary statement of the general results of the census of manufactures for the State of North Dakota issued by the

Bureau of the Census, showed a consistent increase at the census of 1919, as compared with that for 1914. In the order of their importance from a percentage standpoint, the increases for the several items ranked as follows: Cost of materials, 207.2 per cent; value of products, 171.3 per cent; wages, 123.6 per cent; value added by manufacture, 93.4 per cent; capital, 72.7 per cent; salaries, 61.9 per cent; wage earners, 36.5 per cent; proprietors and firm members, 28.4 per cent; number of establishments, 27.9 per cent; salaried employees, 20.8 per cent; and primary horsepower, 18.1 per cent. The capital invested, as reported in 1919, showed a gain of \$10,337,000, or 72.7 per cent, over that in 1914. The average capital per establishment was approximately \$27,000 in 1919 and \$20,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$30,006,000 or 207.2 per cent. The average cost of materials per establishment in 1919 was approximately \$50,000, and in 1914 \$21,000. The value of products in 1919 showed an increase over that in 1914 of 36,227,000, or 171.3 per cent. The average per establishment in 1919 was approximately \$64,000 and in 1914 \$30,000. The value added by manufacture in 1919 shows an increase over that in 1914 of \$6,221,000, or 93.4 per cent. The value added by manufacture in 1919 formed 22.5 per cent of the total value of products and in 1914 31.5 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 156, or 20.8 per cent, while the average number of wage earners increased 1197, or 36.5 per cent. A comparative summary for the State for 1914 and 1919 follows:

	Census—		Per cent. of increase, 1914-1919
	1919	1914	
Number of establishments.....	894	699	27.9
Persons engaged in manufactures.....	6,151	4,627	32.9
Proprietors and firm members.....	774	603	28.4
Salaried employees.....	905	749	20.8
Wage earners (average number).....	4,472	3,275	36.5
Primary horsepower.....	17,791	15,062	18.1
Capital.....	\$24,550,000	\$14,213,000	72.7
Services.....	6,885,000	3,302,000	107.0
Salaries.....	1,484,000	886,000	61.9
Wages.....	5,401,000	2,416,000	123.6
Materials.....	44,490,000	14,484,000	207.2
Value of products.....	57,374,000	21,147,000	171.3
Value added by manufacture (value of products less cost of materials).....	12,884,000	6,668,000	93.4

EDUCATION. According to the school census of 1920, there were 203,857 persons of school age (6 to 20, inclusive) residing in the State of North Dakota in June, 1920. The number of different persons employed as teachers in the schools in 1920 was 8219. The average monthly salary of all teachers was a little over \$95.

TRANSPORTATION. Total mileage of steam railway in the State in 1920, including secondary main line and side-tracks, was 6396.6, of which 2359.83 were under the Great Northern, 1926.82 under the Northern Pacific, and 1486.86 under the Minneapolis, St. Paul and Sault Ste. Marie railway companies.

CHARITIES AND CORRECTIONS. The State institutions in 1920 were as follows: State Training School, Mandan; State Penitentiary, Bismarck; Hospital for Insane, Jamestown; School for Deaf, Devils Lake; Institution for Feeble-Minded, Grafton; School for Blind, Bathgate; Tuberculosis Sanatorium, Dunseith; Florence Crittendon Home, Fargo; Soldiers Home, Lisbon.

ELECTION. The vote in the presidential election of 1920 was: Harding (Republican), 160,072; Cox (Democrat), 37,422; Debs (Socialist), 8283; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 55,206; Hughes (Republican), 53,471; Benson (Socialist), 5716. The vote for governor was: Lynn J. Frazier (Republican, Non-Partisan), 116,934; J. F. T. O'Connor (Democrat, Independent), 112,292; and for United States Senator: Dr. E. F. Ladd (Republican, Non-Partisan), 130,098; H. H. Perry (Democrat, Independent), 87,006.

POLITICS AND GOVERNMENT. In 1918, various features of the industrial programme of the Non-Partisan League had been embodied in the laws. These included among other things the construction of a large elevator and flour mill at Grand Forks, and the deposit of public funds in the bank of North Dakota which was to serve as the financial organ of the new industrial programme. At the close of the year 1920, however, the financial system was seriously embarrassed. The election in the autumn had for one of its issues the doing away with the compulsory deposit of public funds in the bank. The people voted in large majority in favor of this. The leaders of the League had planned to make the bank the source of credit for the new plans and at one time over \$30,000,000 was under the control of the bank. As a result of the decision at the November election, this sum had been reduced to about \$10,000,000. Withdrawal of funds was checked to some extent by the action of the Industrial Commission which passed resolutions prohibiting counties, towns, etc., from

withdrawing funds in order to place them in private banks. Nevertheless, the situation was embarrassing and the members of the League were planning to introduce a measure in the next legislature that would make the bank the depository of all public funds despite the decision in the November election. On account of the difficulty with the bank, the Industrial Commission was obliged to discontinue the work on the building programme. The programme had called for the financing of industries by the issue of bonds, amounting to \$17,000,000. Down to 1920, the Industrial Commission had been able to dispose of only a very small fraction of this amount.

OFFICERS. Governor, Lynn J. Frazier; Lieutenant-Governor, Howard R. Wood; Secretary of State, Thomas Hall; State Auditor, D. C. Poindexter; State Treasurer, John Steen; Attorney-General, Wm. Lemke; Commissioner of Insurance, S. A. Olsness; Commissioner of Agriculture and Labor, John N. Hagen; Superintendent of Public Instruction, Minnie J. Nielson.

JUDICIARY. Supreme Court Justices: Luther E. Birdzell, J. E. Robinson, R. H. Grace, Harry A. Bronson, A. M. Christianson.

NORTH DAKOTA, UNIVERSITY OF. A co-educational State institution of higher education at University Station, Grand Forks, N. D., founded in 1883. The enrollment for the summer session was 163; that of the fall, 1152. There were 102 members in the faculty. The Federal Land Endowment Funds of \$1,500,000 yielded an income of \$65,000. In addition to the endowment income, there was an annual income of: Student fees, \$42,800; dormitories, \$10,000; State appropriations, \$241,400; miscellaneous, \$5200. There were 58,000 volumes in the general university library. President, Thomas Franklin Kane, Ph.D., LL.D.

NORTHERN TERRITORY. A territory of the Australian Commonwealth, situated in the central and northern part of the continent; formerly part of the States of South Australia which transferred it to the Commonwealth, Jan. 1, 1911. Area, 523,620 square miles; population, exclusive of aborigines, estimated June 30, 1919, 4921, the aborigines being placed at over 20,000. Capital, Darwin with a population in 1911 of 958. See AUSTRALIA.

NORTHWESTERN COLLEGE. A co-educational institution of the higher learning at Naperville, Ill., founded in 1861. There were 199 women and 291 men enrolled for the fall session. The faculty numbered 35 with six additions during the year. Productive funds of the institution amounted to \$291,000 and the income for the year was \$63,466. The library contained 15,000 volumes. The campaign for \$750,000 was completed successfully; \$500,000 for endowment and the balance was to be used for a women's dormitory to be erected in the near future. President, E. E. Rall, Ph.D.

NORTHWESTERN UNIVERSITY. A co-educational institution of the higher learning at Evanston, Chicago, Ill.; founded in 1851. At the summer school there were 652 men and 214 women enrolled, while the fall session enrollment was 4540 men and 1863 women. There were 401 members in the faculty. The productive endowment was approximately \$5,600,000 and the total income from all sources was \$3,250,000. The university library contained 123,662 volumes and 93,720 pamphlets. The Gary Law Library of the Law School contained 50,000 volumes, and in addition to these main libraries, other schools had small technical libraries which contained 20,000 volumes. The outstanding feature of the year was the purchase of a new campus site in the city of Chicago where it was proposed to erect new buildings to house the Schools of Law, Dentistry, Medicine, and Commerce, which are now somewhat scattered in the city. In connection with the University, the Joseph Medill School of Journalism has been established. President, Walter Dill Scott, Ph.D., who was called to the presidency of the university Oct. 1, 1920, to fill the vacancy created by the resignation of Lynn Harold Hough, D.D., Th.D.

NORTHWEST PROVINCES. The Prairie Provinces of Canada. See CANADA.

NORTHWEST TERRITORIES. That part of western Canada which is bounded on the west by Yukon Territory and separated by the 60th parallel from British Columbia and the Prairie Provinces on the south; comprising the districts formerly known as the Northwest Territory, Kee-

watin, and Rupert's Land. Area, estimated at 1,242,224 square miles, including 34,298 water area; population (1911), 18,481. It is under the administration of the officers of the Royal Northwest Mounted Police, directed by a commissioner whose headquarters are at Ottawa. Commissioner at the beginning of 1920, Lieutenant-colonel F. White.

NORTON, GEORGE W. Newspaper writer, died, October 22. He was born at Strong, Me., Aug. 25, 1855, and graduated at the State Normal School. He taught school for some years and then became a reporter for the Portland *Evening Express*, of which he became editor in 1872. He was a delegate to the Republican National Convention in 1900.

NORWAY. A constitutional monarchy in northwestern Europe; formerly united with Sweden, but separated June 7, 1905; forming the western and northern part of the Scandinavian peninsula, with an extreme length of 1110 miles and an extreme width of 250 miles. Of the total area, 75 per cent is estimated as unproductive, 21.5 per cent under forest and 3.5 per cent under cultivation. Area estimated at 125,001 square miles; population, Dec. 1, 1910, 2,391,782; estimated, Jan. 1, 1918, 2,632,010. Capital, Christiania, with an estimated population on Jan. 1, 1918, of 259,445. The movement of population in 1918 was as follows: Births (exclusive of still born), 63,910; deaths (exclusive of still born), 43,104. The emigration in 1918 amounted to 1226, of whom 1179 went to the United States. The national church is Lutheran, which is endowed by the State and in 1910 there were only 62,553 dissenters, including 10,986 Methodists, 7659 Baptists, and 2046 Roman Catholics. Education is compulsory between the ages of 6½ and 14. The number of public elementary schools in 1916 was 6130 in the country with 289,050 pupils and 3345 schools in the towns with 98,876 pupils. The university in Christiania had an attendance in 1916 of 1500 students. Forests and fisheries are the chief national sources of wealth. No later figures for their output were available than those given in the preceding YEAR BOOK. Pyrite is the chief mineral product; others are silver, copper ore, iron ore, feldspar, and nickel. Total value of mineral products in 1917, 42,824,000 kroner. Mining establishments, Jan. 1, 1918, numbered about 106, employing 8518 workers. Though the country is rich in water power, manufactures are retarded by the lack of coal, being wholly dependent on importation. The chief manufactures are electrochemical products. According to figures published at the beginning of 1918, there were 6935 manufacturing establishments employing a total of 161,278 persons. See AGRICULTURE.

COMMERCE. In 1917 the leading countries in respect to the value of imports into Norway were, in the order of their importance: America, Great Britain and Ireland, Sweden, Germany, and Denmark. Chief among the countries of destination for exports were: Great Britain and Ireland, Germany, France, and Sweden. The total value of the imports in 1917 was 1,661,307,700 kroner; of the exports, 791,372,200 kroner. The chief classes of imports in their order of value were: Vessels, carriages, machinery, etc.; minerals, unwrought; breadstuffs; and textiles. Leading articles of export were: Animal produce; timber and wooden articles; and minerals, manufactured. The export trade fell off consid-

erably in 1918-19, but began to recuperate in 1920, exports during the first half of that year having more than doubled as compared with the first half of 1919. At the same time imports were reported as diminishing in proportion. The government was resorting to various means for developing the export trade.

COMMUNICATIONS. The State railways, Jan. 1, 1920, had a mileage of 1719; private lines, 290; total, 2009. The registered merchant vessels, Jan. 1, 1919, numbered 3474 with a net tonnage of 1,223,900. The following table shows the number and tonnage of vessels which arrived at and departed from Norwegian ports during the years 1914-1919:

Years	Incoming		Outgoing	
	Number	Tons	Number	Tons
1914	10,103	5,700,000	10,134	5,600,000
1915	10,804	5,800,000	10,943	5,500,000
1916	9,435	4,700,000	9,388	4,700,000
1917	4,576	2,400,000	4,573	2,500,000
1918	4,070	1,900,000	4,075	2,000,000
1919	6,104	3,100,000	6,041	3,000,000

FINANCE. The Norwegian budget estimate for the financial year was as follows (crown=\$0.268):

Revenue		Crowns
Direct taxes		365,400,000
Indirect taxes		118,700,000
Other revenue		187,200,000
Loans		60,200,000
Total		726,500,000
Expenditure		Crowns
Recurring expenses		361,400,000
Non-recurring expenses		334,100,000
Debt service		81,000,000
Total		726,500,000

This showed a deficit of 60,200,000 crowns to be met by borrowing. The pre-war debt of Norway was 360,100,000 crowns. The debt at the beginning of 1920 was 1,016,900,000 crowns, of which 687,000,000 crowns was internal and 329,900,000 crowns was external. The per capita debt at the beginning of 1920 was 391.11 crowns. At par of exchange this was \$104.82, against \$69.20 for Sweden, \$73.17 for Denmark, and \$235.34 for the United States.

On Dec. 15, 1920, the Norwegian Storting (parliament) approved the government budget for the period 1920-21, which closes June 30, 1921. The budget showed a total expenditure of 772,889,000 crowns (\$207,134,252 normal exchange). The ordinary expenditures amount to 511,600,000 crowns (\$137,103,800), and the extraordinary expenditures to 261,289,000 crowns (\$70,025,452).

GOVERNMENT AND HISTORY. Executive power is in a king (Haakon VIII., born Aug. 31, 1872), who acts through a council of state. Legislative power is in the Storting or parliament elected by universal suffrage without distinction of sex. Distribution of members by party groups at the beginning of 1920: Liberals, 52; Conservatives, 39; Moderate Liberals, 10; Socialists, 18; Agricultural party, 3; Democrats, 3; Independent, 1. Ministry in 1920: Prime Minister and Minister of Justice, Otto B. Halvorsen; Foreign Affairs, C. F. Michelet; Finance, E. Hagerup Bull; Public Works, C. Middelthun; Agriculture, G. A. Jahren; Social Questions, O. Klingenberg; Provisions, J. H. Rve Holmboe; Commerce, G. Meyer Brunn; Defense, C. W.

Wefring; Public Worship, N. Ridderwald Jensen.

In the autumn the Russian delegate, M. Litvinov arrived in Norway about the same time as the Norwegian delegates returned from the Moscow Congress. A campaign in favor of Bolshevism was at that time going on in the country. M. Litvinov proposed a commercial treaty between the two governments, September 18, but it was not accepted. The Norwegian government made a proposal which merely looked to the resumption of trade to a limited extent, offering to receive a certain amount of mail and code telegraph matter in return for trade relations to a certain degree, but refusing free transit through the country and demanding guarantees against Bolshevik propaganda. There had meanwhile developed in Norway a movement for giving labor a share in industrial management and it had taken form in a system of industrial works councils. A commission had been appointed with the approval of parliament to draft a measure for workmen's participation in the management of industries, and the commission proposed a law which provided for a shop council in every business and industrial establishment having a certain number of employees; the council to consist of not more than three representatives of the employers and from three to nine representatives of the clerical and office force, the exact number in each case to be fixed by a district council which was in turn to be subject to a national council having jurisdiction over all.

The Communists of northern Norway, were found to be in regular relations with the Soviet government in the latter months of the year, and were believed to be supported by Soviet money. A serious railway strike began on all the State lines, December 1. It was opposed by the bourgeois element and the conservative Socialists, which believed the real object of the strike was the seizure of political control. The Norwegian Community Aid, an association organized to prevent strikes, was active in combating the attempt of the Communists to turn it into a general strike by the aid of money received from Moscow. Through the efforts of the Community Aid strike breakers were gathered in sufficient numbers to run the plants. By December 15, the attempt to make it a general strike was abandoned. See POLAR RESEARCH; SPITZBERGEN; and NAVAL PROGRESS.

NORWEGIAN LITERATURE. See SCANDINAVIAN LITERATURE.

NOTRE DAME. A Roman Catholic institution of higher learning at Notre Dame, Ind., founded in 1842. The enrollment for the summer school was 470 and for the regular fall session, 1147. There were 70 members in the faculty. There were 103,000 volumes in the library. President, Rev. Jas. A. Burns, C.S.C., Ph.D.

NOVA SCOTIA. One of the Maritime Provinces of Canada. Capital, Halifax, the chief naval station of Canada. Area, 21,068 square miles, of which 360 are under water; population in 1911, 492,338; population of Halifax in 1911, 46,619; of the next largest city, Sydney, 17,723. Movement of population, 1917-17: Births, 12,421; deaths, 9125; marriages, 3611. The chief occupation is agriculture. Area under field crops in 1919, 992,000, valued at \$51,034,000. There is a profitable fruit industry, apples being the most important crop; and po-

tatoes of a superior quality are raised. In 1919 there were 406,000 cattle in the province. Estimated forest area, 12,000 square miles. Railway mileage (1918), 1480. Along with Newfoundland the fisheries are the most important in Canada, engaging annually from 30,000 to 40,000 men. The value of the 1919 catch was \$14,351,000. Executive power is in a lieutenant-governor, appointed for five years by the Governor-General of Canada, and acting through a council or responsible ministry; and legislative power in an assembly of two houses, namely, the Legislative Council of 21 members appointed by the Crown for life and the House of Assembly of 43 members chosen by popular vote for five years. Lieutenant-governor in 1920, J. McCallum Grant; prime minister, George H. Murray.

NUTRITION, HUMAN. See **FOOD AND NUTRITION.**

NYASSALAND, or NYASALAND PROTECTORATE. A British protectorate, formerly known as British Central Africa, situated on the southern and western shores of Lake Nyassa and extending towards the Zambezi River. Area, 39,573 square miles; population (1918), 1,217,107 natives, 724 Europeans, and 407 Asiatics. The seat of government is Zomba; chief settlement, Blantyre. The schools in 1917-18 numbered 2038 with 120,254 pupils, education being in the hands of 11 Christian missions. Coffee is largely produced in the Shiré province and tobacco is grown for export. Latterly a development of cotton-growing has been indicated. Imports (1918-19), £648,979; exports, £504,739; revenue, £187,645; expenditure, £150,198. In January it was learned that financial arrangements had been completed in London for the early construction of the railway from Beira in Mozambique across the Zambezi River to Fort Johnston in British Nyassaland, which was guaranteed by the government. The new plan was of special importance to the colony as it would enable new settlers, many of whom were ex-service men, to reach Nyassaland by way of the Portuguese port. Its effect on the Portuguese colony of Mozambique was expected to be equally beneficial. Governor at the beginning of 1920, Sir George Smith.

NYREDGHAZI, ERVIN. See **MUSIC, Artists, Instrumentalists.**

OAKLEY, P. DAVIS. Ex-Congressman, died at New Haven, Conn., November 18. He was born at East Millstone, N. J., Feb. 25, 1860; was educated in the public schools; went into business at Hartford, Conn.; and held in succession several city offices. He was member of Congress, 1915-17. In politics he was a Republican and he was well-known as an after-dinner speaker.

OATS. As for most other crops, statistics regarding the world's production of oats in 1920 were incomplete. It was reported that estimates covering 12 countries, normally producing about 40 per cent of the total oat crop of the world, show a yield of about 2,019,615,000 bushels, as compared with 1,821,743,000 bushels in 1919. Estimates made public by the International Institute of Agriculture, Rome, placed the 1920 production of Bulgaria, Spain, Finland, France, Wales, Italy, Netherlands, Sweden, Switzerland, Japan, Algeria, and Tunis at 605,182,000 bushels or nearly 20 per cent above the crop of 1919 and 6 per cent above the 5-year average of 1914-1918. The crop of Germany was reported at 237,600,000 bushels or 9,600,000 bushels under

the yield of the year before. The Canadian crop was estimated at 543,058,000 bushels as compared with 394,387,000 bushels the preceding year and considerably above the average yield. Before the war the United States and Russia were the leading oats producing countries, but statistics for Russia have not been available since 1914.

The production of the United States in 1920 as estimated by the Department of Agriculture was 1,524,055,000 bushels or 292,301,000 bushels above the yield of the preceding year. The area in 1920 was 43,323,000 acres and the average rate per acre 35.2 bushels. In 1919 the production was 1,231,754,000 bushels, the area 41,835,000 acres, and the average acre yield 29.4 bushels, while the average for the five years 1914-1918 was a yield of 1,414,558,000 bushels, an area of 41,773,000 acres, and a production of 33.9 bushels per acre. The crop of 1920 was not only satisfactory in quantity produced, but it also was of high quality. The estimated average weight per measured bushel was 33.1 pounds or 1.1 pounds over the standard weight. The leading oats-producing states in 1919 were: Iowa, Illinois, Texas, Minnesota, and Wisconsin, which yielded nearly one-half of the total production for that year.

The average farm value of oats on Dec. 1, 1920, was only 47.2 cents per bushel, while the corresponding value in 1919 was 71.5 cents and the average for the 5-year period 1914-1918, 54.7 cents. The total value of the 1920 crop on this basis was \$719,782,000, or \$160,514,000 under the total value of the 1919 crop and \$53,550,000 under the average total value for the years 1914-1918, inclusive. On June 10, 1920, No. 2 White oats sold on the Chicago market for \$1.29 per bushel, the highest price on record, while towards the close of the year the price was down practically to a pre-war basis. The price of oats during the period of rising prices of grains as a result of war conditions increased proportionately only a little more than half as much as the price of other cereals. Practically one-half of the total crop of the United States is marketed by farmers during the four months July to October. The period of harvesting oats in this country begins in Texas in May and ends in the northern tier of States in September.

OBERLIN COLLEGE. A non-sectarian, co-educational institution of the higher learning at Oberlin, Ohio, founded in 1833. For the fall session of 1920 there were 1708 students enrolled. In the summer session there were 162 students. The faculty numbered 176, including 28 new members. The assets amounted to \$10,027,000 and the productive endowment to \$6,900,000. The income for the year amounted to \$682,000. There were 204,500 bound volumes and 199,700 unbound volumes in the library. President, Henry Churchill King.

OBLIGADO, RAFAEL. See **SPANISH LITERATURE.**

O'DONOVAN, WILLIAM RUDOLF. Sculptor, died, April 20. He was born in Preston County, Va., March 28, 1844, and served in the Confederate army during the Civil War. After the war he devoted himself to sculpture in New York City, where he had a studio, and executed many portrait busts, and bas-reliefs of well-known persons, including: Edmund Clarence Stedman, Walt Whitman, Gen. Joseph Wheeler, Madame Blavatsky, Generals Daniel E. Sickles and James Grant Wilson; also statues of Washington for

Venezuela and for the monument commemorating the peace at Newburgh, N. Y., and various equestrian statues of Lincoln, Grant, and others. His works were well known and very widely distributed. He was one of the founders of the Tile Club.

OHIO. POPULATION. According to the preliminary report of the census of 1920, there were 5,759,394 residents in the State, Jan. 1, 1920, as compared with 4,767,121 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 256,699, a falling off of 5.6 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920.

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	8,735,000	162,099,000	110,227,000
	1919	3,668,000	161,892,000	195,284,000
Oats	1920	1,614,000	71,339,000	35,670,000
	1919	1,523,000	51,020,000	36,730,000
Barley	1920	102,000	2,825,000	2,316,000
	1919	120,000	8,024,000	3,780,000
Wheat	1920	2,259,000	28,698,000	47,852,000
	1919	2,848,000	53,932,000	114,386,000
Clover Seed	1920	150,000	195,000	2,398,000
	1919	180,000	130,000	3,666,000
Rye	1920	80,000	1,152,000	1,555,000
	1919	108,000	1,804,000	2,616,000
Tobacco	1920	63,000	60,480,000	7,862,000
	1919	76,000	65,360,000	22,026,000
Hay	1920	3,152,000	4,255,000	82,959,000
	1919	3,082,000	4,253,000	92,698,000
Potatoes	1920	115,000	11,500,000	15,525,000
	1919	125,000	7,825,000	14,640,000
S'rg'm Sirup	1920	5,900	537,000	816,000
	1919	5,400	454,000	681,000
* Pounds. * Tons. * Gallons.				

FINANCE. The balance on hand, July 1, 1918, was \$2,337,851; receipts during fiscal year \$21,166,909; expenditures during fiscal year \$17,470,178; cash on hand July 1, 1919, \$2,398,631.

EDUCATION. The population under 21 years of age in 1919 was 1,415,463, of whom 723,709 were girls and 691,754 boys; schools numbered 11,295; enrollment, 959,943.

CHARITIES AND CORRECTIONS. In 1920 the State Board of Charities reported the aggregate cost and the number of persons cared for during the year ending July 1, 1919 by the political subdivisions as follows:

Agency	Total cost	Persons Cared for
County and city infirmaries...	\$1,904,909.68	14,024
Public children's homes.....	821,864.79	6,146
Blind relief	412,685.41	4,262
Mothers' pensions	605,124.44	5,500
Outside relief by counties.....	196,750.65	4,266
Outside relief by townships and counties	259,950.25	20,824
County jails	333,338.35	39,091
Total	\$4,534,623.57	94,113
First preceding year.....	\$4,218,211.99	97,201
Second preceding year.....	3,748,165.89	88,488
Third preceding year.....	3,562,264.69	106,324
Fourth preceding year.....	2,944,866.60	87,871

LEGISLATION. The legislature, which had convend on Jan. 6, 1919, reassembled in December, and continued during the early part of 1920.

The work accomplished by it included the following features: Reorganization of the State's health service; increase from two to three cents a mile of the legal rate of fare on steam and interurban railways; provision for the punishment of a class of offenses known as criminal

syndicalism; prohibition of the displaying of the red flag in parades; passage of a new State highway act; prohibition of the teaching of German in the elementary grades of public and parochial schools.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 1,182,022; Cox (Democrat), 780,037; Debs (Socialist), 57,147; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 604,361; Hughes (Republican), 514,858; Benson (Socialist), 38,092; Hanly (Prohibitionist), 8080. The vote for governor was: Davis (Republican), 1,039,835; Donahey (Democrat), 918,962; Hamilton (Socialist), 42,889; and for United States Senator: Willis (Republican), 1,134,953; Julian (Democrat), 782,650.

OHIO STATE UNIVERSITY. A State institution of the higher learning at Columbus, Ohio; founded in 1870. The enrollment for the summer session of 1920 was 1409 and that of the regular fall session, 7156, allowing for duplications. The faculty including some additions numbered 569. The funds were: \$62,750 from endowment and \$2,459,887.04 from other sources. The library contained 213,784 volumes. President, William Oxley Thompson, D.D., LL.D.

OHIO NORTHERN UNIVERSITY. An institution of the higher learning at Ada, Ohio, founded in 1871. Enrollment for the summer session of 1920 was 587; that for the regular fall session was 794. There were 35 members in the faculty. The productive funds for the year amounted to \$200,000 and the income for the year, \$92,000. The library contained 12,000 volumes. The university received a new athletic field. President, Albert Edwin Smith, D.D., Ph.D.

OHIO UNIVERSITY. A co-educational State institution of the higher learning at Athens, Ohio; founded in 1804. The enrollment for the fall of 1920 was 1071 and for the summer session (first half) 2163. In the extension department, there were 713 students enrolled. The faculty numbered 101. The receipts of the year amounted to \$387,244. In the library there were 52,000 volumes. Acting-president, E. W. Chubb.

OHIO WESLEYAN UNIVERSITY. A co-educational institution of the higher learning at Delaware, Ohio; founded in 1844. There were 1456 students enrolled in the fall session. The faculty numbered 98 with six new members added. The productive funds were estimated at \$1,600,000. There were 90,000 volumes in the library. A department of Business Administration was added. President, John Washington Hoffman, M.A., D.D., LL.D.

OHL, JOSIAH KINGSLEY. Journalist, died, June 27. He was born at Brownsville, Pa., in 1863; educated at Kenyon College; and from 1887 to 1896 was on the staff of the *Atlantic Constitution*. He was afterwards Washington correspondent for that and other papers and from 1886 to 1906 was attached to the Washington bureau of the *New York Herald*. From that time to 1913 he was correspondent for the *Herald* in the Far East. After serving on the editorial staff till 1918, he became editor-in-chief and managing editor of that paper.

OIL. See **PETROLEUM**.

OIL ENGINES. See **INTERNAL COMBUSTION ENGINES**.

OKLAHOMA. POPULATION. According to the preliminary report of the census of the 1920,

there were 2,028,283 residents in the State, Jan. 1, 1920, as compared with 1,657,155 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 191,731, an increase of 0.8 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	3,190,000	89,320,000	48,233,000
	1919	2,900,000	69,600,000	88,392,000
Oats	1920	1,500,000	48,000,000	21,120,000
	1919	1,425,000	47,025,000	32,918,000
Barley	1920	180,000	3,120,000	2,246,000
	1919	65,000	1,950,000	2,379,000
Wheat	1920	2,890,000	46,240,000	62,424,000
	1919	3,860,000	54,040,000	110,782,000
Broom Corn..	1920	105,500	*17,000	2,206,000
	1919	137,000	*26,900	4,008,000
Hay	1920	1,347,000	*2,492,000	27,276,000
	1919	1,330,000	*2,996,000	34,745,000
Peanuts	1920	13,000	455,000	928,000
	1919	18,000	512,000	1,418,000
Potatoes	1920	42,000	3,818,000	5,972,000
	1919	44,000	3,520,000	7,216,000
Sw't Potatoes.	1920	24,000	2,760,000	3,643,000
	1919	25,000	3,250,000	5,850,000
Cotton	1920	2,765,000	*1,300,000	68,250,000
	1919	2,424,000	*1,016,000	178,839,000
Grain Sorg'ms	1920	1,555,000	40,430,000	24,258,000
	1919	1,440,000	38,120,000	49,680,000

* Tons, * Bales.

EDUCATION. School population at the close of 1920, 697,286; enrollment, 589,282; number of teachers, 15,389; salaries of teachers, from \$50 to \$250 a month. The average annual salary of teachers in 1919 was \$689.

TRANSPORTATION. The railway mileage of the State at the close of 1920 was 8739.6.

ELECTION. The vote in the presidential election of 1920 was: Harding (Republican), 243,415; Cox (Democrat), 215,521; Debs (Socialist), 25,638; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 148,115; Hughes (Republican), 98,299; Benson (Socialist), 45,212. The vote for United States Senator was: Harreld (Republican), 247,824; Ferris (Democrat) 217,677.

OKLAHOMA, UNIVERSITY OF. A co-educational State institution of the higher education at Norman, Okla., founded in 1890. The enrollment for 1920 was 2713 for the regular fall session and for the summer session, 1307. The faculty numbered 173. The funds derived from taxation and appropriation by State Legislature amounted to \$805,000. There were 30,000 volumes in the library. There were several new buildings: Auditorium and Fine Arts Building, Library, Geology, Hospital and Armory. President, Stratton D. Brooks, LL.D.

OLD AGE PENSIONS. UNITED STATES. A measure for the retirement of employees in the classified civil service passed the Senate, April 3, and the House, April 30, and was approved by the President, May 22. It provided for compulsory retirement at the age of 70 and if at least fifteen years service had been rendered, such employees would be eligible for retirement on an annuity. For mechanics and city and rural letter carriers the age would be 65 years, and for railway mail clerks, 62 years. Retirement benefits were divided into two classes, namely, for total disability resulting from disease or injury not caused by intemperance, vicious habits or wilful misconduct of an employee, and permanent retirement for age in service. The benefits of the bill would extend to employees in the

classified civil service, employees of the Superintendent of Capitol Buildings and Grounds and of the Library of Congress, superintendents of United States national cemeteries, and employees of the Botanical Gardens and might, upon executive order of the President, be extended to include any group of civil service employees not classified at the time it became effective. The President would also be authorized to exclude from the benefits of the bill any employee or group of employees in the classified civil service whose tenure of office is of uncertain duration or intermittent. Postmasters and employees of the Lighthouse Service would not receive the benefits of the bill. In computing time for purposes of retirement, service in the army, the navy and marine corps or Coast Guard might be included. The following classification and rates were established: Class A, to include employees having a service record of 30 years or more. Such employees would receive as retirement pension an amount equal to 60 per cent of their basic salary for the ten years next preceding retirement, with a maximum of \$720 per annum; Class B, to include employees with a service record of 27 to 30 years and a retirement allowance of 54 per cent of basic pay or not more than \$648 per annum; Class C, employees with a service record of 24 to 27 years and a retirement allowance of 48 per cent or not more than \$576 per annum; Class D, employees with a service record of 21 to 24 years and a retirement allowance of 42 per cent, or not more than \$504 per annum; Class E, employees with a service record of 18 to 21 years and a retirement allowance of 36 per cent or not more than \$432 per annum; and Class F, employees with a service record of 15 to 18 years and a retirement allowance of 30 per cent or not more than \$360 per annum. The minimum allowances provided for the several classes are: Class A, \$360; Class B, \$324; Class C, \$288; Class D, \$252; Class E, \$216; and Class F, \$180.

Beginning with the first day of the third month following the enactment of the bill and monthly thereafter there would be made effective a plan of compulsory contribution to the pension fund on the part of employees. From the salaries of such persons there would be deducted a sum equal to two and one-half per cent of their basic compensation. The amount thus deducted would be carried to a special fund to be known as "The Civil Service Retirement and Disability Fund" in connection with which individual accounts would be carried with every employee prospective beneficiary. These accounts would bear interest at 4 per cent per annum compounded annually.

OLMSTEAD, JOHN CHARLES. Landscape architect, died, February 24. He was born in Geneva, Switzerland, Sept. 14, 1852, and studied at Yale University. Having studied landscape architecture under Frederick Law Olmstead, he became his partner and designed parks in Boston, Chicago, Louisville, Seattle, and numerous other cities and towns, as well as grounds of universities, State capitals, and many other public institutions. He was one of the most prominent of the landscape architects of his time.

OLYMPIC GAMES. The Olympic Games which were held at Antwerp, Belgium, during the spring and summer of 1920 resulted in a complete triumph for athletes of the United States. In the track and field events Uncle Sam's boys

scored more than double the number of points collected by their closest competitor, Finland. In swimming it was practically a clean sweep for the United States both in men's and women's competitions. Shooting told the same story, while in rowing the crew of the United States Naval Academy humbled the best oarsmen England could produce.

The track and field events, which are always regarded as the chief feature of Olympic Games, were held in August, the point scoring being in accordance with the rules of the International Amateur Federation which allow 7 points for first place, 5 for second, 4 for third, 3 for fourth, 2 for fifth, and 1 for sixth.

The final standing of the various countries represented was as follows:

United States, 212 points; Finland, 105; Sweden 95; England, 92; France, 35; Italy, 28; South Africa, 24; Canada, 10; Norway 10; Denmark, 9; Esthonia, 8; New Zealand, 5; Belgium, 5; Australia, 5; Czecho-Slovakia, 3; Holland, 2; Luxembourg, 1.

Five new world's records and three new Olympic records were made as follows:

400-meter hurdles, Loomis, U. S., 54 seconds (world); pole vault, Foss, U. S., 13 feet 5 $\frac{1}{2}$ inches (world); 400-meter relay, U. S. team, 42 $\frac{1}{2}$ seconds (world); javelin throw, Myrra, Finland, 215 feet 9 $\frac{1}{4}$ inches (world); 110-meter high hurdles, Thomson, Canada, 14 $\frac{1}{2}$ seconds (world); throwing 56-pound weight, McDonald, U. S., 36 feet, 11 $\frac{1}{2}$ inches (Olympic); running high jump, Landon, U. S., 6 feet, 4 $\frac{1}{2}$ inches (Olympic); Marathon, Kolehmainen, Finland, 2 hours, 32 minutes, 35 $\frac{1}{2}$ seconds (Olympic).

A summary of the results of the track and field competitions follows:

100-meter run, won by Paddock, U. S.; Kirksey, U. S., second; Edward, England, third; Scholz, U. S., fourth; Alikahn, France, fifth; Murchison, U. S., sixth. Time, 10 $\frac{1}{2}$ seconds.

200-meter run, won by Woodring, U. S.; Paddock, U. S., second; Edward, England, third; Murchison, U. S., fourth; Davidson, New Zealand, fifth; Oosterlaap, South Africa, sixth. Time, 22 seconds.

400-meter run, won by Rudd, South Africa; Butler, England, second; Engdahl, Sweden, third; Shea, U. S., fourth; Ainsworth, England, fifth; Däfel, South Africa, sixth. Time 49 $\frac{3}{4}$ seconds.

800-meter run, won by Hill, England; Eby, U. S., second; Rudd, South Africa, third; Mountain, England, fourth; Scott, U. S., fifth; Sprott, U. S., sixth. Time, 1 minute, 53 $\frac{3}{4}$ seconds.

1500-meter run, won by Hill, England; Baker, England, second; Shields, U. S., third; Vohralik, Czecho-Slovakia, fourth; Lurdgren, Sweden, fifth; Andre, France, sixth. Time, 4 minutes, 1 $\frac{1}{2}$ seconds.

5000-meter run, won by Guillemot, France; Mirmi, Finland, second; Bachman, Sweden, third; Koskenimie, Finland, fourth; Blewit, England, fifth; Seagrove, England, sixth. Time, 14 minutes, 55 seconds.

10,000-meter run, won by Mirmi, Finland; Guillemot, France, second; Wilson, England, third; Maccerio, Italy, fourth; Manhes, France, fifth; Lumatainen, Finland, sixth. Time, 31 minutes, 45 $\frac{1}{2}$ seconds.

Marathon, won by Kolehmainen, Finland; Lossman, Esthonia, second; Arne, Italy, third; Broos, Belgium, fourth; Ternoskoki, Finland, fifth;

Sofus, Denmark, sixth. Time, 2 hours, 32 minutes, 35 $\frac{1}{2}$ seconds.

3000-meter steeplechase, won by Hodge, England; Flynn, U. S., second; Ambrosini, Italy, third; Mattson, Sweden, fourth; Devaney, U. S., fifth; Hulsenbach, U. S., sixth. Time 10 minutes, 2 $\frac{1}{2}$ seconds.

110-meter hurdles, won by Thomson, Canada; Barron, U. S., second; Murray, U. S., third; Wilson, New Zealand, fourth; Smith, U. S., fifth; Christiernssen, Sweden, sixth. Time, 14 $\frac{1}{2}$ seconds.

400-meter hurdles, won by Loomis, U. S.; Norton, U. S., second; Desch, U. S., third; Andre, France, fourth; Christiernssen, Sweden, fifth; Daggs, U. S., sixth. Time, 54 seconds.

3000-meter walk, won by Frigerio, Italy; Parker, Australia, second; Remer, U. S., third; McMaster, South Africa, fourth; Maroney, U. S., fifth; Dawson, England, sixth. Time, 13 minutes, 14 $\frac{1}{2}$ seconds.

10,000-meter walk, won by Frigerio, Italy; Pearman, U. S., second; Gunn, England, third; McMaster, South Africa, fourth; Hehir, England, fifth; Maroney, U. S., sixth. Time, 48 minutes, 6 $\frac{1}{2}$ seconds.

Running high jump, won by Landon, U. S.; Muller, U. S., second; Ekeland, Sweden, third; Whalen, U. S., fourth; Murphy, U. S., fifth; Baker, England, sixth. Height, 6 feet, 4 $\frac{1}{2}$ inches.

Running broad jump, won by Peterson, Sweden; Johnson, U. S., second; Abrahamson, Sweden, third; Templeton, U. S., fourth; Aastad, Norway, fifth; Frankason, Sweden, sixth. Distance, 23 feet, 6 inches.

Hop, skip and jump, won by Timlos, Finland; Jansson, Sweden, second; Aimlof, Sweden, third; Sahling, Sweden, fourth; Landers, U. S., fifth; Ahearn, U. S., sixth. Distance, 47 feet, 7 inches.

Pole vault, won by Foss, U. S.; Peterson, Denmark, second; Meyers, U. S., third; Knourk, U. S., fourth; Jorgensen, Denmark, fifth; Rydburg, Sweden, sixth. Height, 13 feet, 5 $\frac{1}{2}$ inches.

Javelin throw, won by Myrra, Finland; Peltonen, Finland, second; Johanson, Finland, third; Saaristi, Finland, fourth; Klumberg, Esthonia, fifth; Lindstrom, Sweden, sixth. Distance, 215 feet, 9 $\frac{1}{4}$ inches.

Discus throw, won by Niklander, Finland; Taipale, Finland, second; Pope, U. S., third; Dallhegen, Sweden, fourth; Bartlett, U. S., fifth; Erickson, Sweden, sixth. Distance, 146 feet, 7 $\frac{1}{2}$ inches.

Hammer throw, won by Ryan, U. S.; Lind, Sweden, second; Bennett, U. S., third; Svensson, Sweden, fourth; McGrath, U. S., fifth; Nicholson, England, sixth. Distance, 173 feet, 51 $\frac{1}{2}$ inches.

Shot put, won by Porolla, Finland; Niklander, Finland, second; Liversedge, U. S., third; McDonald, U. S., fourth; Nilsson, Sweden, fifth; Tammer, Esthonia, sixth. Distance, 48 feet, 9 inches.

Throwing 56-pound weight, won by McDonald, U. S.; Ryan, U. S., second; Lind, Sweden, third; McDermott, Canada, fourth; Svensson, Sweden, fifth; Peterson, Finland, sixth. Distance, 36 feet, 11 $\frac{1}{2}$ inches.

400-meter relay, won by U. S. team; France, second; Sweden, third; England, fourth; Denmark, fifth; Luxembourg, sixth. Time, 42 $\frac{1}{2}$ seconds.

1600-meter relay, won by England; South

Africa, second; France, third; U. S., fourth; Sweden, fifth; Belgium, sixth. Time, 3 minutes, 22½ seconds.

3000-meter team race, won by U. S.; England, second; Sweden, third; France, fourth; Italy, fifth; no sixth. Time, 8 minutes, 51½ seconds.

Cross country team race, won by Finland; England, second; Sweden, third; U. S., fourth; France, fifth; Belgium, sixth.

Individual cross country race, won by Mirmi, Finland; Bockman, Sweden, second; Lomatainen, Finland, third; Wilson, England, fourth; Horgarty, England, fifth; Conquisnier, Italy, sixth.

Pentathlon, won by Lethonen, Finland; Bradley, U. S., second; Legendre, U. S., third; Hamilton, U. S., fourth; Fortimen, Finland, fifth; Looland, Sweden, sixth.

Decathlon, won by Loveland, Norway; Hamilton, U. S., second; Ohlson, Sweden, third; Holmer, Sweden, fourth; Nilsson, Sweden, fifth; Wiekholm, Finland, sixth.

Tug-of-war, won by England; Holland, second; Belgium, third; U. S., fourth; Italy, fifth.

The United States owed its sweeping victory in the swimming events for men to the fine work of three Hawaiians, Duke Kahanamoku, Pua Kealoha, and Warren Kealoha. A summary of the results follows:

100-meters, won by Duke Kahanamoku, U. S.; Pua Kealoha, U. S., second; W. W. Harris, U. S., third; H. Herold, Australia, fourth. Time, 1 minute, 2 seconds. In the original final of this event which was ordered re-swum because of interference Kahanamoku covered the distance in the new world's record time of 1 minute, ¾ second.

400-meters, won by Norman Ross, U. S.; L. Langer, U. S., second; G. Vernot, Canada, third; G. Kahele, U. S., fourth. Time, 5 minutes, 26½ seconds.

1500-meters, won by Norman Ross, U. S.; G. Vernot, Canada, second; F. Beaurepaire, Australia, third; G. Kahele, U. S., fourth. Time, 22 minutes, 23¾ seconds.

800-meter relay, four men on team, each swimming 200 meters, won by U. S. (Perry, McGillivray, Pua Kealoha, Norman Ross, Duke Kahanamoku); Australia second; Great Britain third; Sweden fourth. Time, 10 minutes, 4¾ seconds (new world's record).

200 meters, breaststroke, won by Malmroth, Sweden; Henning, Sweden, second; Aaltoonen, Finland, third; Howell, U. S., fourth. Time, 3 minutes, 4 seconds.

400 meters, breaststroke, won by Malmroth, Sweden; Henning, Sweden, second; Aaltoonen, Finland, third; Howell, U. S., fourth. Time, 6 minutes, 31 seconds.

100 meters, backstroke, won by W. Kealoha, U. S.; Kegeris, U. S., second; Beitz, Belgium, third; McGillivray, U. S., fourth. Time, 1 minute, 15½ seconds. W. Kealoha, in one heat established a new world's record of 1 minute 14¾ seconds.

Plain high diving won by Wallman, Sweden; Skogland, Sweden, second; Jansson, Sweden, third; Adlerz, Sweden, fourth.

Springboard diving won by Kuehn, U. S.; Pinkston, U. S., second; Balbach, U. S., third.

High fancy diving won by Pinkston, U. S.; Adlerz, Sweden, second; Priest, U. S., third.

In the water polo tournament Great Britain won the final match from Belgium by a score of

3 to 2. Sweden finished third and the United States fourth.

The results of the women's swimming contests follow:

100 meters, won by Ethelda Bleibtrey, U. S.; Irene Guest, U. S., second; Frances Cowells-Schroth, U. S., third; E. Jeans, England, fourth. Time, 1 minute, 13¾ seconds.

300 meters, won by Ethelda Bleibtrey, U. S.; Margaret Woodbridge, U. S., second; Frances Cowells-Schroth, U. S., third; E. Jeans, England, fourth. Time, 4 minutes, 34 seconds (new world's record).

400 meters relay, four women, each swimming 100 meters, won by U. S. (Bleibtrey, Woodbridge, Cowells-Schroth, Guest); England, second; Sweden, third. Time, 5 minutes, 12¾ seconds.

Springboard diving won by Eileen Riggan, U. S.; Helen Wainwright, U. S., second; Thelma Payne, U. S., third; Aileen Allen, U. S., fourth.

The points scored by the various countries in the swimming competitions follow: United States, 53; Sweden, 21; Great Britain, 6; Belgium, Canada, Australia, and Denmark, 4 each.

The Grand Canal, near Brussels, was the scene of the Olympic rowing events, the results being as follows:

Eight-oared race won by U. S. Naval Academy; Leander, England, second.

Four-oared race won by Switzerland; United States second; Norway third.

Single sculls won by Kelly, U. S.; Beresford, England, second.

Double sculls without coxswain, won by U. S.; Italy second; France third.

The United States trap shooting team consisting of Jay Clark, Jr., Mark Arie, Horace R. Bonser, B. S. Donnelley, F. W. McNeir, Fred Plum, F. M. Troeh, and F. S. Wright won the Olympic team championship with a total score of 547 out of a possible 600. Other countries finished as follows: Belgium, 503; Sweden, 500; England, 488; Canada, 474. Holland, Norway, and France withdrew before the competitions ended.

Arie, U. S., captured the individual championship with a score of 95 out of a possible 100. The United States won the first five places in this event although only the first three counted.

In the rifle matches, both team and individual, the United States made practically a clean sweep of the first places and the same was true in the pistol and revolver contests.

Canada carried off the laurels in hockey with the United States ranking second. In the various matches the United States defeated Switzerland 22 to 0, and Czechoslovakia 16 to 0, but lost to Canada 0 to 2. Sweden and Norway carried off the honors in figure skating.

The United States was more concerned with the Davis Cup matches in 1920 than with the Olympic tennis competitions with the result that Uncle Sam was entirely unrepresented in these events which resulted as follows:

Men's singles, A. Raymond, South Africa, defeated I. Kumagae, Japan, 5-7, 6-4, 7-5, 6-4; men's doubles, Turnbull and Woosnam, England, defeated Kumagae and Kashio, Japan, 6-2, 5-7, 7-5, 7-5; women's singles, Mlle. Suzanne Lenglen, France, defeated Miss Holman, England, 6-3, 6-0; women's doubles, Mrs. McNair and Miss MacKane, England, defeated Mrs. Beamish and Miss Holman, England, 8-6, 6-4; mixed

doubles, Mlle. Lenglen and Max Decurgis, France, defeated Mr. Woosnam and Miss Holman, England, 6-4, 6-2.

OMAHA, NEB. See MUNICIPAL OWNERSHIP.

OMAN. An independent Mohammedan state in southern Arabia, guaranteed in its integrity by Great Britain and France. Area, estimated at 82,000 square miles; population at 500,000, chiefly Arabs. Capital, Muscat, with a population, including that of the adjacent town of Muttrah, of 24,000. The reigning Sultan in 1920 was Seyyid Taimur bin Feysil.

O'NEILL, JAMES. Actor, died, August 10. He was born in Ireland in 1847 and came to the United States in childhood. For many years he was the leading man in Baltimore, Cleveland, Chicago, and other stock companies. From 1877 to 1880 he was in San Francisco, where he appeared in the rôle of Christ in the *Passion Play*. He was especially celebrated as the central figure, Edmond Dantes, in *Monte Cristo*, in which he appeared for 15 years. During the latter part of his life he played the rôle of D'Artagnan in the *Three Musketeers*.

ONTARIO. Next to Quebec, the largest province of Canada, lying between Quebec on the east and Manitoba on the west. Capital, Toronto. Area, 407,262 square miles, of which 41,382 are under water. Population (1911) 2,523,274; Indian population (1911) 23,044. Population of province, estimated Jan. 21, 1919, 2,799,000. The population of Toronto was estimated in 1919 at 473,829—the largest city in Canada; population of Ottawa, the capital of the Dominion, in 1915, 102,000. Other large cities are Hamilton, 101,000, and London, 56,000. The executive power is in a lieutenant-governor, appointed for five years by the governor-general who acts through a responsible ministry or legislative council; and legislative power in a single chamber of 111 members, elected for four years. At the beginning of 1920, the Legislature was distributed among political groups as follows: United Farmers, 44; Liberals, 28; Conservatives, 25; Labor, 12; Independents, 2. At the beginning of 1920, the Lieutenant-governor was Lionel Clarke; Prime Minister, E. C. Drury. See CANADA.

OPERA. See MUSIC.

ORANGE FREE STATE. A province of the Union of South Africa. Capital, Bloemfontein. See SOUTH AFRICA, UNION OF.

ORCHESTRA. See MUSIC.

OREGON. POPULATION. According to the preliminary report of the census of 1920, there were 783,389 residents in the State, Jan. 1, 1920, as compared with 672,765 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 50,188, an increase of 10.3 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	46,000	1,436,000	\$1,854,000
	1919	45,000	1,170,000	1,814,000
Oats	1920	330,000	12,045,000	7,829,000
	1919	318,000	9,953,000	9,157,000
Barley	1920	80,000	2,576,000	2,576,000
	1919	71,000	1,640,000	2,460,000
Wheat	1920	1,107,000	22,900,000	29,770,000
	1919	1,115,000	20,808,000	44,113,000
Hay	1920	1,102,000	2,402,000	33,135,000
	1919	1,100,000	2,291,000	36,261,000

Crop	Year	Acreage	Produc. Bu.	Value
Potatoes	1920	43,000	5,590,000	6,472,000
	1919	45,000	4,230,000	6,845,000
Hops	1920	12,000	9,900,000	3,465,000
	1919	11,000	6,400,000	5,120,000

* Pounds. * Tons.

MINERAL PRODUCTION. A preliminary estimate of the production of metals at mines in Oregon in 1920, compiled by the United States Geological Survey, showed a small decrease in the output of gold and an increase in the output of silver and copper as compared with that in 1919. The estimated output of gold in 1920 was \$942,200, which compared with the output in 1919, was a decrease of only \$38,645. It was somewhat surprising that the State so nearly held its own in the production of gold, in view of the adverse conditions under which gold mining was carried on. Less than half as many mines were producing in 1919 as in 1918, and the number must have still further decreased in 1920. The output of silver in Oregon in 1920 was 199,940 ounces, as compared with 111,121 ounces in 1919, an increase for 1920 of 88,819 ounces. The output of copper in 1920 was 2,300,000 pounds, or about 85,000 pounds more than in 1919. High cost of wages and supplies and scarcity of miners, together with lack of water for mining and power, handicapped the mining industry. The average value of the ore per ton in gold and silver was greater than it was a few years before, and the average value per ton in all metals was also higher. Placer gold decreased in output owing to a decrease in the number of active hydraulic mines, lack of water, and smaller output by dredges. Among the deep mines some of those formerly very productive ceased operations. The most productive county in Oregon was Baker, and the next Grant. Baker County produced about 80 per cent of the metallic output of the State, almost all from the deep mines of the county.

CHARITIES AND CORRECTIONS. The State institutions of charity and correction with their population are as follows:

	Present Sept. 30 1920	Average daily population
Oregon State Hospital.....	1,748	1,786.15
Eastern Oregon State Hospital...	488	501.88
Oregon State Penitentiary.....	268	276.7
State Institution for Feeble-Minded	538	440
Oregon State Training School.....	141	140.5
Oregon State Tuberculosis Hospital	92	80.54
Oregon State School for the Blind..	35	41
Oregon State School for the Deaf..	82	100.07
Oregon State Industrial School for Girls	38	42
Oregon State Soldiers' Home.....	158	130
Total	3,583	3,488.84

All the above are at Salem with the exception of the Eastern Oregon State Hospital, and the Oregon State Soldiers' Home which are at Pendleton and Roseburg, respectively.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 143,592; Cox (Democrat), 80,019; Debs (Socialist), 9801; Watkins (Prohibitionist), 3595; Socialist Labor, 1515; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 126,813; Wilson (Democrat), 120,087. The vote for United States Senator was: Stanfield (Republican), 116,696; Chamberlain (Democrat), 100,133; Slaughter

(Socialist), 6949; Hayes (Independent), 4456; Svenson (Independent-Labor), 1782. See EDUCATION IN THE UNITED STATES.

OREGON, UNIVERSITY OF. A co-educational State institution of the higher learning at Eugene, Oregon; founded in 1872. There were 518 students enrolled for the summer session. On the Eugene campus there were 904 men and 784 women enrolled for the regular fall session. In Portland, there were 132 men enrolled in the medical school. There were 123 members in the faculty, including 49 new members. In addition, there were 43 members on the staff of the School of Medicine in Portland. The library contained 100,000 volumes.

The School of Physical Education was organized which included the departments of Physical Education for women, Physical Education for men, Hygiene and Health Service. Dr. John F. Bovard, former head of the department of zoology, was made the dean of the School of Physical Education. After the death of Dr. Kenneth A. J. Mackenzie, the former dean of the Medical School in Portland, Dr. Richard B. Dillehunt was appointed dean. The new building of the School of Medicine was named Mackenzie Hall in honor of the former dean. Colin V. Dymont, former professor of journalism in the University and dean of the School of Journalism in the University of Washington, was appointed dean of the College of Literature, Science, and the Arts, succeeding Dr. John Straub, who remained as Dean of Men. Pre-technical courses were organized whereby the students will receive both the baccalaureate and technical degrees. A committee was appointed on Research. A scholarly series was published and a *Law School Journal*, edited by the staff of the School of Law, was initiated. Prof. William G. Hale, formerly dean of the University of Illinois, was made dean of the Law School, succeeding Dean Hope.

At a special election in May the people of the State voted a new millage tax for the additional support of higher educational institutions. From this tax .5143 mills on an assessed valuation of property in the State of approximately \$1,000,000,000 was appropriated to the University annually, which made a total millage for the University of .8143 mills. Income from fees and other sources made a total income for the University of \$900,000. New buildings: A Woman's Building, devoted largely to Physical Education for Women, was completed. This building cost, including its equipment, about \$300,000, of which \$100,000 was raised by public subscription. Other buildings under construction with approximate costs were as follows: Commerce Building to house School of Commerce, Department of Economics, and School of Sociology, \$100,000; Women's Dormitory, \$90,000; School of Education group, including School of Education, University Model High School, and the High School Gymnasium, \$125,000; School of Music, \$75,000; remodeling old buildings, \$25,000. President, Prince L. Campbell.

ORGANIC CHEMISTRY. See CHEMISTRY, GENERAL PROGRESS OF.

ORNITHOLOGY. See ZOOLOGY.

O'SHEA, LUCIUS TRANT. British chemist, died, April 18. He was professor of applied chemistry in the University of Sheffield, and professor emeritus of metallurgy at King's College, London. He was educated at Owens College, Manchester, and began to teach at Firth College, Sheffield, in 1880, in the department of chemistry.

In 1890 he began a course of lectures on mining chemistry. During the Boer War he commanded a detachment of Royal Engineer Volunteers and received a medal for his services. During the last 15 years of his life he devoted his time largely to the study of explosives and the coking of coal in retort ovens. His publications include: *Elementary Chemistry for Coal Mining Students*; *Retention of Lead by Filter Paper*; and *The Safety of High Explosives*.

OSWALD, ALFREDO. See MUSIC, Artists, Instrumentalists.

PAHANG. See FEDERATED MALAY STATES.

PAINE, JOHN HEBARD. New York newspaper man, died in New York City, October 2. He was born in Cleveland, Ohio, the son of the well-known railway builder and organizer, Charles Paine. In 1896 he joined the staff of the *Evening Sun* in New York. After serving successively on the staff of the *Evening Post* and other periodicals he joined that of the *New York Times* in 1906 and rose to the position of night city editor which he held at the time of his death.

PAINTING AND SCULPTURE. Depression was the key note in the art world during the year 1920, following the termination of the Great War, and the cessation of all artistic activities connected therewith. Dealers and buyers alike experienced this unavoidable reaction, and little was done in the way of spectacular buying or acquisition by private collectors or museums. Because of the unsettled conditions in transportation, paintings and other art objects purchased abroad, have not, generally speaking, been publicly made known. In the United States artists feel financially the need of concerted efforts to stimulate the appreciation of an intelligent and discerning public to the fact that the possession of a good painting, even though modest in size, is a real asset, both culturally and as an investment.

The necrology list of 1920 includes among American artists: Alexander T. Van Laer, well-known landscape painter and art lecturer; William T. Smedley, portrait painter and illustrator; William H. Lippincott, Lawrence Brumidi, and S. Montgomery Roosevelt, portrait painters; Henry Mosler, veteran genre and figure painter; and Robert Bloodgood, one of the oldest living landscape painters. Besides, Charles F. Browne, Charles Shackleton and Anthony Stuffers, landscape painters; Thomas Shields Clark, painter and sculptor; Mathias Sandor, landscape and miniature painter; George E. Bissell and William R. O'Donovan, sculptors. To these must be added the names of Samuel P. Avery, connoisseur and art dealer, well known for his beneficent gifts to Columbia University and the Brooklyn museum; Samuel Colman, artist, connoisseur, and collector; Francis Hatch Kimball, architect; W. H. deB. Nelson, art editor of the *International Studio*; and Samuel Hollyer, veteran line engraver. In Great Britain are noted the deaths of F. J. Williamson, sculptor to the late Queen Victoria, George Woolecroft Rhead, mural and figure painter; Hugh Thomson, illustrator; Andrew Carrick Gow, R. A., figure and historical painter; Briton Riviere, an animal painter of note. Also, Charles H. Mackie, R. S. A., and J. Coutts Michie, Scotch painters. Eminent figures included in the European list are Max Klinger (q.v.), famous German painter, sculptor, and lithographer; Anders Zorn (q.v.), foremost Swedish painter and etcher; Ferdinand Hodler eminent Swiss painter; and Ferdinand

Roybet, well-known French genre painter. Also, William F. G. Pape, German portrait and historical painters; Luc-Olivier Merson, French painter, Friedrich von Ganz, important German art collector; Paul Madeleine, French landscape painter; Francis Michel Tonnetti, Laurent Honore Marqueste, and Jean Baffiere, French sculptors. From Spain is noted Raimundo de Madrazo, portrait painter, and from Italy, Vittore Grubicy and Emile Boggio, painters.

PENNSYLVANIA ACADEMY. At the 115th annual exhibition of the Fine Arts Academy of Pennsylvania, the number of paintings was still further reduced from 400 last year to 360; together with 158 pieces of sculpture. But the smaller number of exhibits did not add to the quality of the exhibition. Few impressive canvases of large size were shown. Among notable figure subjects were "Day and her Sister Night," a two figure composition, careful in drawing and execution, by Philip Hale; "Nelly," an exceedingly fat woman of middle age, by Charles Hawthorne; "The Sisters," a beautiful, tender canvas by the late J. Alden Weir; a large "Family Group" in the characteristic manner of George deForest Brush; Karl Anderson's "Pegasus," a not altogether successful attempt to portray an imaginative subject; and a robust portrayal of an old sea captain by Randall Davey. The "Red Kimona" by Joseph Decamp was awarded the Walter Lippincott Prize. Childe Hassam received the Converse Gold Medal for an engaging "Interior." Some excellent landscapes of straightforward realistic presentation were noted; as "Village and Hills in a Mantle of Snow" by Gardner Symons; "Day Before Christmas" by E. W. Redfield; "Drying Sails" by Hayley Lever; and "Beyond" by Jonas Lie. More poetic in character was "The Lime Quarry" by Paul King. Daniel Garber, Charles Rosen, W. Elmer Schofield, Colin Campbell Cooper, and other equally well known painters were well and adequately represented. A fine strong canvas, "Ice Bound Falls" by Ernest Lawson, won the Temple Gold Medal, and the Sestan Medal went to Mr. Hugh Breckenridge's colorful "Edge of the Woods." A very charming still life, "At the Window," by Mildred Miller received the Mary Smith Prize. The portraits included those of Col. Richard H. Harte, an impressive affair, with emerald green lining to the academic robe, by Leopold Seyffert; "Portrait of a Russian Woman," by Eugene Speicher, awarded the Beck Gold Medal; Prof. J. Jastrow, a forceful presentment by Wayman Adams; and Wm. P. Gest by Wm. M. Paxton. Alice Kent Stoddard, Camelia Whitehurst, Walter MacEwen, Edward Tarbell, S. G. Phillips, Charles Hopkinson, and Adelaide Chase sent portraits of interest. The sculpture exhibit was unusually good, with representative pieces by Sigurd Neandross, (a bust of General Goethals); Laura Gardin Fraser, Dr. Tait McKenzie, Brenda Putnam, Miss Nancy Coonsman, and Malvina Hoffman, who sent a bust of Lieutenant-Colonel Varilla and "The Offering," a bronze group of two adolescent figures skillfully rendered, which received the Widener Gold Medal. Alfred Lenz's "Pavlova" gave the impression of a bird in flight.

NATIONAL ACADEMY, SPRING EXHIBITION. Under far different surroundings than was customary did the National Academy open its 95th annual exhibition this year. Owing to a fire in the Fine Arts building, which rendered it un-

tenable, visitors found themselves traveling many miles to the Brooklyn Institute Museum to view the largest and most representative gathering of paintings and sculpture that the National Academy ever hung. All acceptances were placed, making a total of 634 oils, 77 pieces of sculpture, and 203 black and whites, the latter exhibit being an interesting innovation. Of these 900 exhibits, 681 were by artists not members of the Academy, truly a surprising and bewildering array. Large, well-lit galleries, a uniformly harmonious background, crowded rooms, music, and tea, all contributed to give an unwonted gayety to the opening day. The prize winners were as follows: The first Altman prize to Capt. W. Elmer Schofield for a rushing river scene entitled "Rapids"; the second to "The Green River" by Robert Spencer; the Isaac M. Maynard prize for the best portrait in the exhibition, went to Henry R. Rittenberg for a careful and workmanlike presentation of the well-known painter, Elliott Daingerfield. The first, second, and third Hallgarten prizes were awarded to Armin Hansen's "Boy with Cod"; Kentaro Kato's portrait head of a young woman, and "Gossips" by John Costigan. "Mountain Courtship," a charming bit of genre by James R. Hopkinson, received the Thomas B. Clark Prize, and Anna Hyatt was awarded the Saltus medal of merit for small model of her Joan of Arc statue. Ernest Lawson and Jonas Lie sent typical examples, strong and colorful; while Carl Rungius, Chauncey Ryder, Gardner Symons, Kenneth Frazier, Gifford and Reynolds Beal were well represented. Eric Hudson, Paul King, and George Pearce Ennis sent canvases of especial merit. Daniel Garber, Howard Giles, Emil Carlson, Karl Anderson, E. W. Redfield, Ernest Albert, James Weiland, and Roy Brown are but a few of the successful exhibitors which space prevents recording. Between 30,000 and 40,000 visitors viewed the exhibition, a contrast to the sparse attendance in Manhattan. Unfortunately, the increased attendance did not result in increased sales.

ART INSTITUTE, CHICAGO. "The best exhibit ever presented at the Institute," was the passing verdict on its 33d annual Exhibition of American Art. Fewer paintings were hung, leaving room for more spacious grouping, and the small sculptural exhibit, instead of being in a room by itself, was decoratively arranged in the main galleries. Many rejections were of course necessary when the selection was narrowed down to 180 acceptances and 50 invited paintings. "Torn Lingerie" by Frederick Frieseke, carried off the Potter Palmer Gold Medal and \$1000 prize, the W. M. R. French Gold Medal, and also the Edward M. Butler medal for the most popular painting in the exhibition. A spirited and perhaps necessarily theatrical portrait of Otis Skinner in "The Honor of the Family" by George Luks, was awarded the Logan medal and prize of \$1500. Other prize winners were Louis Betts' dignified portrait of James B. Forgan, and "Midsummer," a rich, glowing landscape by Robert C. Chadayne. The Martin B. Cahn Prize for the best work by a Chicago artist went to Edgar A. Payne for a striking California landscape, "Rugged Slopes and Tamarack." "Down to the Sea," a desolate canvas with figures of fishermen and their wives, by Rockwell Kent, was among the Honorable Mentions. Noteworthy works by Walter Ufer, Ernest Blumenschein, Victor Hig-

gins, all with Indian subjects; Frederick Waugh, Charles Woodbury, with fine marines; Chauncey Ryder, Gardner Symons, Hayley Lever, Granville Smith, Frank V. Dudley, Howard Russell Butler, Frederick Clay Bartlett, and a host of other well known men contributed to the pleasing aspect of the ensemble. Portraits by Charles Hopkinson, Oliver D. Grover, Robert Henri, Leopold Seyffert, Giuseppi Trotta, Mary Prindeville, Margaret Richardson, and Abbot Thayer's "Young Woman in Olive Plush" should also be mentioned. The sculpture exhibit lost much of its individuality when serving as part of the general decorative scheme of the galleries, and most of the pieces were small in size and unexciting. Among those exhibiting were Albert Laessle, Leo Friedlander, and George Loeber.

CARNEGIE INSTITUTE EXHIBITION. After a lapse of five years caused by the war the annual international exhibitions at the Carnegie Institute, Pittsburgh, were resumed this year. Numerically the 19th exhibition was about the same as in former years, but with a larger proportion of foreign exhibits. With a total number of 303 paintings, there were 198 from America, 83 from England, 53 from France, and 167 from remaining European countries. The Honor Room was devoted to 22 works by the eminent French painter, Emile Rene Menard, most of which were large, richly colored canvases embodying classic legends and incidents. The first prize was awarded to Abbot Thayer's "Young Woman in Plush," a fine, full-length portrait study; an English painter, Algernon Talmage, carried off the second with his "By the Cornish Coast," a vivid, sparkling bit of out-door painting; and the third went to Walter Ufer's "Susanna and Her Sisters," three Indian maidens seated at a window amid modern accessories and flooded with sunlight.

Individual canvases such as Zuloaga's characteristic portrait of Mrs. Garret; M. A. J. Bauer, the Dutch painter's "Fakir at the Ganges"; those by Anders Zorn, foremost of Swedish painters; Lucien Simon's "Nausicaa at the Fountain"; and "Basque Gypsies at Supper" by Zubiere, formed vivid points of interest here and there in the spacious galleries. But probably the most striking paintings exhibited were by members of the British School, such as "A Man from Arran," a self portrait by Sir William Orpen; the same artist's full-length, brilliantly handsome, "Mrs. St. George"; and Charles Shannon's "Portrait of Lillah McCarthy, in the character of the Dumb Wife"; "The Walker Brothers" and "Spanish Dancer" by George Coates; "The Toper," a vivid presentment by Frank Brangwyn; Glyn Philpot's large, masterful canvas, "Meeting of Antony and Cleopatra after Actium," and others by Richard Jack, Alfred Minnings, Gerald Moira, E. A. Hornel, and Frederick A. Bosley—all displaying sound technique and individual interpretations.

Many of the paintings by members of the American School had been exhibited during the past four years at other public exhibitions. Among the well-known landscape painters were Charles H. Davis, with his prize winning "Sunny Hillside"; Gardner Symons, Elmer Schofield, Robert Spencer, E. F. Redfield; Willard Metcalf, Francis Murphy, Bruce Crane, Ben Foster, and others of the tonal group; Childe Hassam, with a well-worn subject, "New York Window"; Emil and John Carlsen; and many more, well and adequately represented. The Swedish group in-

cluded Carl Larsson, Julius Olsson, Fjeastad, Osslund, and Boberg. Other French contributors besides those already mentioned were Charles Cottet, Henri Marten, R. X. Privet, Maufra Jacques Blanchet, Amand Jean, Besnard, Le Sidanier, Dauchez, Renoir, and Degas. Characteristic American portraits were shown by George Bellows, Wayman Adams, Henry Rittenberg, Irving Wiles, Malcolm Purcell, Leopold Seyffert, Cecilia Beaux, and others.

SOCIETY OF INDEPENDENT ARTISTS. The fourth annual exhibition of this Society opened with more than 900 paintings in line, arranged alphabetically. According to rule there was an absence of prizes or jury. Many new names appeared, often with intelligent and conscientious work. Well-known artists, who composed the committee in charge, sent noteworthy examples. A fund was created from private generosity to facilitate the membership of deserving artists who were unable to pay the fee. Following, somewhat wearily if conscientiously, the long lines of paintings, double hung, through the various rooms of the Exhibition, the observer halted invariably before a small collection of water color paintings by American Indians from New Mexico and Arizona. On a white ground, in bright, fresh color, each artist had conveyed in a forceful manner, vivid impressions of what had most interested him. With single figures or groups, and no attempt at backgrounds as aids, they showed remarkable interpretative ability.

OTHER EXHIBITIONS. Art exhibitions increase in number and variety each year. Time was when the winter season was supposed to cover all exhibitions of note. Now, the various summer art colonies hold annual, important shows, well worth a journey to enjoy. Of such we mention those of Lynn, Mass., where a new gallery is being erected for this purpose; Newport, Mass., Duxbury, Mass., Provincetown, Mass., Woodstock, N. Y., where exponents of the modern movement and those of the more conservative schools, exhibit amicably under the same roof; Ogonquit, Me., where the ultra-modern foregather; and East Gloucester, Mass. Here is the beautiful little Gallery-on-the-Moors, erected by the generosity of Mr. G. R. Atwood and placed at the free disposal of visiting artists for an annual summer exhibition.

Exhibitions of note by American artists were those of the "New Society of Artists"; the "Allied Artists of America"; the "James Alden Weir Memorial Exhibition" at the Century Club, New York; the "Woman Painters and Sculptors." Besides, an Arthur B. Davies exhibition in the graphic arts; an intimate collection of paintings entitled "Duveneck and His Circle," on view in a New York gallery; and an interesting "Out-Door Sculpture Exhibition" in Rittenhouse Square, Philadelphia. The 50th anniversary of the Metropolitan Museum was celebrated by an exhibition of loans from private collections in the vicinity of New York, interspersed with its permanent collections. The loans were of the most varied nature, including ancient and classical art, arms and armor, musical instruments, Byzantine ivories, tapestries, furniture, sculpture, and especially paintings, both old and modern masters. Together with the museum collections they formed the most important exhibition of art ever held in America.

Exhibitions by European masters in New York included the largest exhibition of Renoir's works

ever held here, and similarly interesting exhibitions of paintings by Gauguin and van Gogh.

Others were by Dedas (charcoals and drawings); C. R. W. Nevinson and Ambrose McEvoy, English painters; Mary Cassatt, and Henri Matisse. An exhibition of paintings by members of the Jury of the French Salon, and another of "Modern French Art," the latter held at the Museum of French Art, complete the list. In Paris an important retrospective exhibition of Matisse awakened much discussion, and the Spanish exhibition of old and contemporary masters, held in London, was of first importance. The International Exhibitions at Venice were resumed.

The winter exhibition of the National Academy was not held this year, and the annual Architectural League exhibit was burned on the eve of opening, entailing much loss of valuable mural and other decorative objects belonging to prospective exhibitors.

MUSEUM ACCESSIONS. The most important accession made by the Metropolitan Museum during the year was the Wm. K. Vanderbilt bequest of 10 paintings including "Lady Guildford," said to be the finest Holbein in America, and the well-known "Noble Slav" by Rembrandt, and two pieces of French 18th century furniture. A large, impressive "Madonna and Child with Saints," by Girolamo dai Libri, in fine state of preservation, and "The Price Family" by Hogarth, were the most important purchases of single paintings. An interesting addition to the decorative arts wing was a complete paneling of a Louis XV room with mantel and mirrors, the gift of J. P. Morgan. The Chicago Art Institute acquired a portrait of Renoir by Albert André, and a complete set of prints, lithographs, and etchings by Odilon Redon. A portrait of Robert Barr by Whistler was purchased by the Detroit Museum and the Brooklyn Institute Museum added a Claude Monet and a portrait by Duvencek to its treasures. Two primitives, Venetian and Spanish, and a magnificent Winslow Homer "The Breaking Wave" were purchased by the Worcester Museum. The National Gallery, Washington, was enriched by the R. C. Johnson Collection of important old masters.

ITEMS OF INTEREST. A memorial relief tablet to J. P. Morgan, the work of Paul Manship, was unveiled at the Metropolitan Museum. At Huntington, Long Island, another museum, the gift of Mrs. August Heckscher, was added to the steadily increasing number in this country. Henry W. Kitson has designed a life-size monument, "The Pilgrim Maiden," to be erected by the National Society of New England Women at Plymouth. The monument for the Americans in the Battle of the Marne, to be erected in France, has been designed by Frederick MacMonnies. Many war memorials are being projected, and the coming year will see their consummation. The restoration by the Germans to Belgium of the missing parts of the famous Ghent altarpiece by the brothers van Eyck, was the cause of much rejoicing and formal celebration at Brussels.

SALES. Few outstanding sales of single canvases were reported during the year, although a number of important private collections were dispersed in France and Germany. In Paris the Collection of Prince Alexis Orloff, with fine examples of early Italian Art, was sold at auction, many examples being bought by American Agents. Other important sales in Paris were

the Willems Collection, and the Beurdeley Collection of old and especially modern paintings. Royal collections of famous porcelains, such as the Meissen ware, were sold at Dresden, and elsewhere in Germany. Reports of the negotiation for a large loan in Belgium on the superb Royal collection of tapestries in Vienna are current. The well-known "Portrait of Eleazar Swalmius" by Rembrandt was sold in Paris to a private collector; and at a Christie sale in London "The Two Philosophers" by the same master, was acquired by a Dutch dealer. In the United States, the McCormick Collection of 18th century English masters, and the Torentino sale of early Italian and French Renaissance paintings and objects of decorative art, were of interest. "The Breaking Wave" and "Surging Surf," two fine examples of Winslow Homer's virile art, were sold by a New York dealer to private collectors for record prices.

PALESTINE. See SYRIA.

PALLES, CHRISTOPHER. Lord Chief Baron of the Court Exchequer in Ireland, died in Dublin, February 14. He was born Dec. 25, 1831, and graduated at Dublin University in 1851. He was called to the bar and practiced in the Court of Chancery. In 1874, he was appointed Chief Baron of the Court of Exchequer and was the last to hold that office. He retired from the bench in 1916. He was prominent in educational affairs and was regarded as a high authority on the common law.

PALMER, A. MITCHELL. Attorney-General in the Wilson Administration and one of the candidates for the presidency in the campaign of 1920, was born at Mooshead, Pa., May 4, 1872, graduated with honors at Swarthmore College, 1891, and was admitted to the bar, 1893. He practiced law and became interested in important financial and commercial institutions at Stroudsburg, Pa., and was member of Congress from Pennsylvania from 1909 to 1915. In his State he made a record for himself by his fight against the former Democratic organization and by his success along with others in turning the Democratic party of the State toward reforms and toward the "dry" programme. In 1912 he was a supporter of Wilson and led the Wilson forces at the Baltimore Convention. He was appointed Judge of the United States Court of Claims in April, 1915, but resigned Sept. 1, 1915. On Oct. 22, 1917, he was appointed Alien Property Custodian under the Trading with the Enemy Act. He acted with great vigor in the interest of this country during the war in respect to the property of Germans and his efficiency in the conduct of the office led to his appointment as Attorney-General on Feb. 27, 1919. During the coal strike he used the injunction against the strikers, but soon afterwards produced a plan for the investigation of the management of mines in respect to the fairness of the profits. The fact that soon afterwards coal production was resumed at increased wages and without increased cost to consumer was laid to the credit of the Attorney-General by his supporters. He was also praised by them for execution of the measures against hoarding and profiteering. He was the most prominent representative in the United States of the policy of repression and deportation pursued during 1919 and 1920, against the radical elements in the country. He quickly became the centre of an enormous mass of controversial printed matter.

PANAMA. A state of Latin America situated between Colombia and Costa Rica; previous to Nov. 3, 1903, a department of Colombia. Capital, Panama.

The area of the eight provinces into which the country is divided is estimated at 33,776 square miles. Population, according to the census of 1920, 401,428. The number of inhabitants by provinces was as follows: Panama, 104,003; Cocle, 47,146; Herrera, 28,737; Los Santos, 34,944; Veraguas, 60,458; Chiriqui, 70,846; Bocas del Toro, 14,408; and Colon, 40,886. In 1911 the population of the republic was 300,564, so the increase in nine years was 100,864. These figures do not include the Canal Zone. Chief towns, Panama, with a population (1917) of 61,369, and Colon with 26,076. The prevailing religion is Catholicism. Education is compulsory between the ages of 7 and 15, and is supported by the state. A new university, the Institute Nacional, has been recently opened.

Gold is the standard of value, and the unit is the balboa, equivalent to the United States dollar. The two-year budget of 1920-21 was estimated as balancing at 7,220,474 balboas. The foreign debt at the beginning of the year according to British sources was £634,000, consisting of bonds issued in the United States for railway construction; and the internal debt, £888,000. In 1920 the department of hacienda and treasury issued a decree providing for the amortization of the internal debt. Presidential decrees of March 11 provided that the annual income from the canal, approximately \$60,000, and the revenue of the constitutional fund, approximately \$1,000,000, be devoted to the cancellation of the debt contracted with the government of the Canal Zone and with the Panama Railroad. This provision was to be effective for one year only.

HISTORY. The president-elect, Señor Belisario Porras (elected August 1st), after a visit to the United States, assumed office, October 1. The first vice-president was Señor Federico Boyd, who was elected September 28th. The new President, after assuming office, appointed his cabinet in which the portfolio of foreign affairs was held by Señor Fabio Arosemena. Plans for road-building in the autumn called for the spending of \$7,000,000 on the making of good roads under the direction of a commission of five members of whom the engineer member was an American. The training college of foreign trade for American exporters was to be opened in January, 1921, under the title of the Pan-American College of Commerce. At the close of the year the President declared that he saved from the grasp of the United States nearly the whole of the island of Tobago, which commands the Pacific entrance to the Panama Canal, but that to judge from the attitude of the American press it would be necessary to remain on the alert in respect to it.

PANAMA CANAL. In 1920 traffic through the Panama Canal continued to increase and for the calendar year, January to December, a high record was scored. Passages were made by 2814 commercial ships, as compared with 2478 during the fiscal year ending June 30, 1920, and 2134 during the calendar year 1919. This was a gain in number of ships of 13.56 per cent over the fiscal year 1920 and 31.87 per cent over the calendar year 1919. The net tonnage of the commercial vessels in the calendar year 1920 aggregated 10,378,265 tons as compared with 8,546,044 net tons in the fiscal year 1920 and 6,919,149 net

tons in the calendar year 1919, or gains of 21.44 per cent, over the fiscal year; and 50 per cent over the calendar year 1919 respectively. The tolls levied during 1920 aggregated \$10,295,329.96, as compared with \$8,513,933.15 in the fiscal year ended June 30, 1920, and \$6,992,218.39 in the calendar year 1919, or a gain of 20.92 per cent over the fiscal year 1920 and 47.24 per cent over the calendar year 1919. The cargo carried by commercial vessels aggregated 11,236,119 long tons in 1920, while that in the fiscal year 1920 was 9,374,499 tons, and in the calendar year 1919 it was 7,468,167 tons. The gain was 19.86 per cent over the fiscal year 1920, and 50.47 per cent over the calendar year 1919.

Considering now the official record of the Panama Canal as contained in the annual report of Brigadier-General Harding, United States army, governor of the Canal, for the fiscal year from July 1, 1919, to June 30, 1920, it was shown that the volume of traffic passing through the Panama Canal exceeded that in any previous 12 month period. The number of commercial ships passing through the canal in the fiscal year 1920 was about two-fifths above the average traffic for the period of canal operation. It was approximately one-sixth greater than the number of ships in the previous record year (1918) and one-fifth greater than the number in the fiscal year 1919.

Of the 2478 commercial ships making the transit in the past fiscal year 1180 were bound from the Atlantic to the Pacific and 1298 from the Pacific to the Atlantic.

The cargo carried through the canal by the commercial ships in the fiscal year 1920 totalled 9,374,499 tons of 2240 pounds. Of these, 4,092,516 tons were bound from the Atlantic to the Pacific and 5,281,983 tons from the Pacific to the Atlantic. The aggregate cargo in the preceding fiscal year carried by commercial ships was 6,877,649 tons.

In addition to the traffic of commercial ships 266 vessels passed through the canal in the service of the United States government, without the payment of tolls. These were practically all army and navy vessels. They carried a total of 365,898 tons of cargo.

The Panama Canal also made new records for revenues and in earnings in excess of expenses of operation and maintenance during the fiscal year. The summation of charges indicated aggregate revenues of \$8,935,871 during the year. On the other hand expenses of operation and maintenance, including a proportion of overhead, in which were the expenses of civil government, hospitals, quarantine and sanitation, the executive department, the accounting department, the Washington office, the operation and repairs of storehouses and quarters, lighting of streets, operation of water and sewer systems and roads, etc., totalled \$6,548,272. This left an excess of \$2,387,599.

Naturally there was no profit in a commercial sense, since there was no consideration of interest charges on the investment or of the depreciation of the plant.

The actual cost of the Canal projects estimated for in 1908 up to June 30, 1920, was figured at \$367,151,696, which may be considered as the capital investment on that date. Including expenditures in previous year, the aggregate of expenditures charged to operation and maintenance of the Canal to June 30, 1920, was \$36,-

657,766. The revenues offsetting this amounted to \$34,426,675, less approximately \$63,533 yet to be refunded on account of erroneous collection of tolls. The recorded deficit in operation and maintenance for the period of Canal operation to June 30, 1920, was therefore \$2,231,091, plus about \$63,533, or approximately \$2,294,624. The differences between revenues and cost of operation for some years past were as follows: 1914, loss \$151,412; 1915, gain \$220,255; 1916, loss \$4,441,207; 1917, loss \$979,648; 1918, gain \$491,500; 1919, gain \$241,822; 1920, gain \$2,387,599.

Tolls constituted about 96 per cent of the revenues. Other items were licenses and taxes, court fees and fines (about \$150,000), and profits on the business operations of the canal adjuncts. The latter item amounted to about \$200,000 for the fiscal year 1920, and was on operations in which the expenditures were over \$14,000,000. For dredging the year's expense was \$1,611,359, an excess of about \$500,000 over the previous year owing to the slides in the Gaillard cut. The report stated that the motion of the slides had been much retarded and that a new period of stability was approaching. Governor Harding predicted that within a reasonable period of normal world conditions the canal would earn an actual profit on its construction cost of \$366,650,000, this sum being exclusive of the expense for military and naval defense.

Shortly after the beginning of the war the canal was opened but travel was several times interrupted by landslides, the last serious one occurring April 15, 1916, after which traffic was hindered by government requisitions, scarcity of fuel, scarcity of vessels, high freights, and financial and industrial uncertainty. In 1919, however, conditions rapidly improved and continued to do so as the figures above indicate. Governor of the Canal Zone in 1920, was Brig.-Gen. Chester Harding.

PAPE, WILLIAM F. G. See PAINTING AND SCULPTURE.

PAPEE. The pulp and paper industry in 1920 showed considerable activity the world over, with special prosperity and high prices for the United States and Canada, but some uncertainty and depression in Europe due to unsettled conditions. In the United States the manufacture of paper had become an industry of great importance and connected with it were many collateral problems ranging from the conservation of the forests from which the wood pulp was derived, down to the widespread dissemination of intelligence in the form of printed matter in economical form. From an annual consumption of three pounds of newsprint paper in 1880 per capita, by 1920 the per capita consumption had increased to 35 pounds per annum, and there were in the United States daily papers with a circulation of over 28,000,000 copies. The available timber in the United States in 1920 was estimated at only about 40 per cent of what it was 100 years previously, and the demand for newsprint and other paper was growing constantly, the year 1920 for example showing an increased output in all lines. This naturally called for increased raw material, particularly wood pulp, and as much of this was imported there was involved the question of tariff duties and commercial relations with other countries; while, as regards domestic manufacture and distribution, trade relations within the United States itself were matters of

government interest in view of repeated demands from consumers, that is the publishers of newspapers both great and small. At the end of the year the United States Tariff Commission in submitting its Fourth Annual Report included a comprehensive wood pulp investigation and survey which analyzed the industry and stated that the serious problems of meeting consumers' needs and avoiding the injurious depletion of the American forests eventually could be solved either by a satisfactory reciprocity agreement with Canada whose wood pulp supplies were far greater than those of the United States, or by reforestation, or by the utilization of the pulp wood forests, or by the discovery of a substitute for wood in the manufacture of paper. One or more of these solutions if satisfactorily developed, might meet the situation, and all were distinctly possible. The report gave a full history of the industry and was of unusual interest.

During the year the Federal Trade Commission issued its usual monthly reports on the condition of the industry dealing with production, shipments, stocks on hand, etc. According to their compilation for the year 1920 the total production of newsprint amounted to 1,511,968 tons, shipments from factories to 1,502,574, and stocks on hand December 31st, to 27,763 tons; as compared with 1,374,517 tons production, 1,378,556 tons shipments and 15,369 tons stock on Dec. 31, 1919. Of these totals standard news was represented by 1,380,239 tons production, 1,373,004 tons shipments, and 19,573 tons stock at end of year in 1920, and 1,227,180 tons production, 1,230,498 tons shipment, and 12,338 tons stocks at Dec. 31, 1919.

The exports of paper and paper products were less in 1920 than in 1919. For the 11 months ended Nov. 30, 1920, they totalled in value \$78,437,710, as compared with \$81,773,863 in 1919, and \$47,989,241 in 1918 for corresponding periods. In 1920 exports of news print for 11 months totalled a value of \$5,523,732 as compared with \$9,717,599 in 1919.

In addition to the statistics compiled by the Federal Trade Commission the production of the larger news print mills in the United States was assembled and analyzed by a trade bureau. The output of news print paper in 1920 reported by 28 United States mills was 1,255,399 tons, or 48,986 tons, nearly 4 per cent, greater than in 1919. The mills had shipments of 1,248,796 tons, or 96.1 per cent of maximum while the production was 98.1 per cent of their maximum capacity. During the year the production of 16 Canadian mills compiled on the same basis was 883,215 tons, 75,709 tons, or 9 per cent, greater than in 1919, which was a production for the year 102.4 per cent of the maximum capacity. The shipments from these Canadian mills aggregated 878,999 or 100.2 per cent of maximum. The total production of the 44 mills in both countries accordingly was 124,695 tons or 6 per cent greater in 1920 than in 1919. There was steady production during the year, declines being noticeable rather towards the close.

As indicating the ability of the United States to develop new sources of wood pulp, it is worthy of record that in December, 1920, the Alaska Pulp and Paper Company was ready to turn out its first pulp from an 18-ton mill in southern Alaska, and that it was proposing to expand to 100 tons capacity in another mill. Naturally there were unlimited supplies of pulp wood im-

mediately available, and the water power from the Speed River amounting to 30,000 or 40,000 horse power, was one of the best in southeastern Alaska. Eventually it was hoped to make paper at these mills and the success of this pioneer experiment would have an important bearing on the pulp and paper industry of the United States.

In July, 1920, the Canadian government abolished government control of the price and distribution of newsprint, though attempts were made to continue or renew such control. These were successfully resisted by the paper interests, which began to have again a free market. In Canada, as well as in the United States, the paper industry has made great strides, and where in 1881 there were but 41 small paper mills with a total wage bill of \$460,000, in 1919 there were 99 large mills with 267,665 employees and a wage bill of \$32,323,000. In 1920 Canada's exports of pulp and paper, mostly to the United States, totalled some \$46,000,000 and formed 10 per cent of the Dominion's exports.

By 1920 the paper and pulp industry in Newfoundland ranked next in importance to fisheries, and the various mills were operating to full capacity during the year. Not much logging had been done in the winter of 1919-20 on account of the severity of the weather, but considerable work was done with the reserve stock accumulated, and in the winter 1920-21 much cutting was to be done. A new pulp mill on the Gander River was under construction by a Norwegian company, but its completion was not looked for until 1921 or 1922. The production statistics for two seasons in Newfoundland are of interest and are given herewith.

Year	Pulp		Paper	
	Tons	Value	Tons	Value
1918-19	11,151	\$475,178	21,819	\$1,545,844
1919-20	19,864	\$84,276	80,719	\$4,725,660

The paper and pulp mills in Sweden suffered a setback during the year and were short of orders. The United States was the only important customer for pulp and the European depression was severely felt. For the year 1920 the sulphite cellulose production was estimated at about 68,000 tons of bleached sulphite and 710,000 tons of unbleached, of which Swedish mills consumed some 23,000 tons of bleached and 160,000 tons of unbleached, while foreign customers near the end of the year had taken 42,000 tons of bleached and 524,000 of unbleached, leaving but a small surplus stock. Of the sulphate cellulose, production of 7000 tons bleached and 210,000 tons unbleached, Sweden took 500 tons and 60,000 tons respectively, and there had been sold 5500 and 143,000 tons, leaving a corresponding small surplus of these products also.

In France on Dec. 3, 1920, the Chamber of Deputies decided that there should be no increase in duties on paper, and while their action was approved by the newspapers and publishers, it was not relished by the paper makers. The duty of 15 or 22½ francs was claimed to be inadequate and not proportionately as advantageous as the 10 or 15 francs prevailing before the war when news print cost but 28 or 30 francs.

In Germany the wood pulp mills in 1920 had reached a production of between 70 per cent and 80 per cent of normal capacity, and the product compared with that of pre-war days. However the export of pulp and paper as in the case of

other commodities, only could be done by government license, and so many uncertainties were involved that foreign customers were as unwilling to purchase as German houses to commit themselves to future business.

The new country of Czecho-Slovakia came into possession of nearly half the pulp and paper mills of former Austria-Hungary and in 1920 was developing the industry. There were some 26,000 persons employed as compared with 17,000 before the war, and 234 Czecho-Slovak concerns were making paper and pulp products. So busily were these engaged that from April 15 to June 30, 1920, paper and pulp products were first among the exports of the country. There were large supplies of wood and conditions favorable for the industry. There were 85 mills engaged in making special grades of paper, 57 making card board, and 76 making pulp, of which 9 made chemical pulp. See FORESTRY.

PAPUA. A territory in the southeastern part of the island of New Guinea (q.v.), formerly known as British New Guinea, and constituting a British colony, but after November, 1905, taken over by the Government of Australia under the name of the Territory of Papua. Included with it are a large number of small islands. Total area, 90,540 square miles of which 87,786 were on the island of New Guinea. Population, estimated June 30, 1919, at 250,000 Papuans, 971 Europeans, and 316 colored other than Papuan. Capital, Port Moresby. The chief agricultural products are coconuts, rubber, sago, and timber. Agriculture has not been developed. On June 30, 1919, 43,560 acres of coconuts were under cultivation and at the same time the total area of plantations was placed at 58,513 acres. There are a number of gold fields in the territory and copper is mined and exported. Recently indications of petroleum have been found over a wide area. The four chief ports of entry are Port Moresby, Samarai, Daru, and Bonagai. Large steamships ply between Port Moresby and Sydney. Financial and commercial figures are as follows according to the *Statesman's Year Book*, of 1920.

Years ended June 30	Local revenue £	Expenditure £	Imports £	Exports £	Tonnage cleared and entered £
1916	49,311	77,913	223,040	125,428	247,887
1917	62,920	88,740	271,640	156,535	231,008
1918	72,594	108,176	283,792	220,599	121,727
1919	73,121	102,962	258,112	176,247	216,341

PARACHUTE RECORDS. See AERONAUTICS.

PARAGUAY. A republic of South America, situated between 20° 16' and 26° 31' south and 54° 37' and 62° west, and between the Paraguay and Alto Parana rivers. Capital, Asuncion.

AREA AND POPULATION, ETC. The area of Paraguay proper is estimated at 65,000 square miles. The so-called Chaco, that is, the region between the rivers Papaguay and Pilcomayo, with an area of over 100,000 square miles is in dispute with Bolivia. Population of Paraguay proper, about 1,000,000 exclusive of Chaco Indians roughly estimated at 50,000. The population is mainly of Guarani Indian stock. Foreigners estimated in 1917 at 60,000, of whom between 20,000 and 30,000 were from Argentina. Asuncion (founded in 1537), is the largest city with a population estimated at 120,000. Others

are Villarrica, with 26,000; Concepcion and Carapegua, with 15,000 each. Roman Catholicism is the state religion. Education is free and, so far as schools are available, compulsory. According to statistics furnished by the directorate general of schools the figures for 1919 were as follows: 1268 public schools and 75 private schools were open during the year. The total attendance of pupils was 82,420. In the government schools were 1810 teachers, of whom 655 were men and 1155 women; there were 141 teachers in the private schools. There were also 6 normal schools with 222 pupils, of whom 68 obtained a master's degree. The university bestows degrees in medicine, law, and the social sciences; its students in 1918 numbered 252. Succeeding paragraphs on production, commerce, etc., contain information supplied in 1920 by the United States Bureau of Foreign and Domestic Commerce.

PRODUCTION. There are rich forest and mineral resources, but they are as yet undeveloped; and oil-producing plants and fibre-producing plants abound. The chief source of wealth at present is the cattle industry. As there has never been a census of live stock made, no definite information as to the number in the country is available, but average estimates give the numbers about as follows: Cattle, 2,500,000; goats, 85,000; hogs, 60,000; horses, 470,000; mules and asses, 40,000; sheep, 600,000.

The live stock generally are of scrub stock, but little effort having been made to improve breeds. The cattle are small and rather thin.

Farming is in a backward state. Farms generally throughout the country consist of patches of a few acres, which are either rented from landlords who live in Asuncion or other towns or are cultivated on the shares. As cost of marketing agricultural products grown in Paraguay is excessively high, because of high transportation expense over the roadless country to Asuncion or other centres where the crops are sold, the farmer finds but little profit or encouragement in growing more than enough to supply the meagre needs of his family. No fertilizers are used. When one tract of land wears out the farmer moves on to another. The ox is the principal draft animal; no large cultivators are in use. Some modern one and two horse plows, harrows, and small cultivators are used, but the tools in common use are primitive and ill-fitted to farming.

The chief crops are yerba maté, oranges, tobacco, sugar cane, mandioca, rice, maize, and cotton, of which the only ones grown in sufficient quantities for export of any importance are yerba maté, oranges, and tobacco. Yerba maté, or Paraguayan tea, is produced from the leaf of the *Ilex paraguayensis*, a small tree indigenous to Paraguay and parts of Brazil and Argentina adjacent to Paraguay. The total estimated production per year is given as about 6,000,000 kilos. The bulk of the exports go to Argentina, where the tea is mixed with the Argentinian production for local consumption or for export from that country under the name "Paraguayan yerba maté." No estimates are available of the production of oranges for any year. All the exports of this crop go to Argentina, but owing to the lack of transportation facilities throughout the country much of the fruit rots on the ground. In 1919, 109,134,650 oranges were exported and 98,659,850 in 1918. Tobacco is one of the chief crops of the country and that on which the small

farmer relies for his chief support. While it is grown successfully in all parts of the country, the region in which it thrives best is the territory surrounding Villarrica, Barrero Grande, Atyra, Tobati, and Villa del Rosario. Both the soil and climate of Paraguay are favorable to the cultivation of tobacco, but as the methods of cultivation, curing, and protecting the plants against insects and unfavorable seasons are poor, the quality is generally of an inferior grade. Mandioca is the diet of everybody in Paraguay. It is a tuber resembling somewhat the sweet potato, and virtually takes the place of both bread and potatoes as a food; it is used also as a starch. It grows everywhere and the yield is great, a hectare of land producing as much as 16,000 kilos; but none is produced for export. Maize, rice, peanuts, a little wheat, and garden vegetables are also grown for local use. See AGRICULTURAL EXPERIMENT STATIONS.

COMMERCE. The total trade of Paraguay for 1919 amounted to 30,652,087 Argentine gold pesos. The imports were 15,835,970 pesos, and the exports 14,816,117 pesos. In 1918 the total trade amounted to 22,451,364 pesos. The imports were 11,051,622 pesos and the exports 11,399,742 pesos. The total value of the import trade and the percentage shared by each country during 1919 are shown in the following table, values being expressed in Argentine gold pesos:

Countries	1919	
	Pesos	Per cent
Argentina	6,772,230	42.8
Brazil	402,867	2.5
England	3,910,767	24.7
France	217,916	1.4
Italy	348,864	2.2
Japan	297,973	1.9
Spain	669,062	4.2
United States	2,713,680	17.2
Uruguay	352,126	2.2
All other countries	150,485	.9
Total	15,835,970	100.0

The following table shows values of exports, destinations, and the percentage going to each country in 1919:

Countries	1919	
	Pesos	Per cent
Argentina	8,291,687	56.0
Spain	1,598,330	10.8
United States	644,182	4.3
France	1,332,405	9.0
Uruguay	834,973	5.7
Italy	209,667	1.4
England	690,821	4.6
All other countries	1,214,052	8.2
Total	14,816,117	100.00

COMMUNICATIONS. The Paraguay Central railway connects Asuncion with Encarnacion on the Alto Paraná, a distance of 234 miles, and at the latter point there is communication by train ferry with the Argentine railway system. In 1920 a branch line was in process of construction from Borja to the Iguazu Falls on the Brazilian border. In 1919 a new line was projected to connect the ports of the upper Paraguay with Montevideo. Vessels entered at the port of Asuncion in 1919 numbered 4385 with a tonnage of 342,681; cleared, 4870, with a tonnage of 367,598.

FINANCE. The budget estimates for 1920, ac-

cording to a British authority were: Revenue, £1,069,530; expenditure, £1,082,846; for 1919, £1,105,911 and £1,071,332, respectively. Outstanding external debt, Jan. 1, 1919, £1,127,357; internal debt, 2,611,940 dollars gold and 36,775,387 dollars paper (exclusive of paper currency placed at 125,000,000 dollars).

GOVERNMENT. Executive power is in a president elected for five years with a cabinet of five members and legislative power in a congress of two houses, viz., a Senate and Chamber of Deputies, both elected by the people. President at the beginning of the year, Dr. Manuel Franco. He was succeeded by Manuel Gondra, elected for the term 1920-24, and inaugurated, August 15. President made up his cabinet as follows: Dr. José Guggiari, Minister of the Interior; Dr. Eusebio Ayala, Minister of Foreign Relations; Col. Chirije, Minister of War; Dr. Eligio Ayala, Minister of the Treasury; Don Rogelio Ibarra, Minister of Justice and Public Instruction.

PARK COLLEGE. A non-sectarian institution of the higher learning at Parkville, Mo., founded in 1875. The enrollment for the fall of 1920 was 431. The faculty numbered 22 with two additions. The productive fund amounted to \$781,472 and the income came to \$154,000. There were 30,000 volumes in the library. A gift of \$55,000 was received from Mr. and Mrs. George A. Lawrence of Galesburgh, Ill. The Department of Instruction increased its teaching staff and there were greater number of practical courses in curriculum. A new building which cost \$150,000 was added, Science Hall. President, Dr. F. W. Hawley.

PARKS, NATIONAL. Tourist travel increased in 1919 and 1920 as shown by the following figures: In 1918, it was 451,691; in 1919, 811,516; and in 1920, 1,058,455. The figures for the last two years, however, included the travelers to national monuments. In 1920 the number of tourists visiting the national parks was 919,504. In view of the increasing interest and importance of the national park system, the attempt of private irrigation and water power interests to get control was matter of serious concern in 1920 as in previous years. Among the various projects which were considered by the authorities as likely to injure the parks and in some instances actually ruin portions of them was the project for a dam at the outlet of Yellowstone Park, and various other projects for the utilization of the water of this and other lakes in the southern part of the park. It was believed that they would seriously damage this portion of the park. There was great danger to the park according to the director's report in the demand for a right of way in the so-called Fall River basin in the southwestern part of the Yellowstone Park. A measure to accede to this demand was before Congress and aroused protests in many quarters interested in the national parks. There was danger also, to the Yosemite Park and to the Sequoia National Park from schemes for reservoirs, aqueducts, etc. Former Secretary Lane had effectively summed up the policy of the National Park service as based on three broad principles: First, that the national parks must be maintained in absolutely unimpaired form for the use of future generations, as well as those of our own time; second, that they are set apart for the use, observation, health, and pleasure of the people; third, that the national

interest must dictate all decisions affecting public or private enterprise in the parks. It was particularly made clear that "every activity of the service is subordinate to the duties imposed upon it to faithfully preserve the parks for posterity in essentially their natural state." "The commercial use of these reservations, except as specially authorized by law, or such as may be incidental to the accommodation and entertainment of visitors, will not be permitted under any circumstances."

The following points in the Director's report for the year ending June 30, 1920 are of especial interest: Every effort was made during the year to improve the condition of wild life in the parks and monuments, to interest the public in this subject, and to promote more careful observation and study of the various species which may be observed under favorable conditions amid natural surroundings. In spite of an unusually dry summer followed by a protracted and severely cold winter in the Rocky Mountain region, losses of big game, except in the case of elk, were surprisingly small. In general, the game did as well as could be expected under existing conditions and was in excellent condition. The slaughter of the northern herd of Yellowstone elk during the Montana "open season" shocked the whole country. Between 6000 and 7000 elk, fearless of man because of the protection afforded by the national park, were forced by heavy snows to cross the park line into Montana to seek natural food in the lower altitudes and were ruthlessly slaughtered by "hunters." Very pertinent was the following quotation from the May-June, 1920, edition of *Natural History*, the journal of the American Museum of Natural History: "It is estimated that the period of the age of mammals as a whole will likely have closed by the middle of this century—that is, in but a paltry 30 years from this year 1920—through immediate destruction by man. What of conservation? Where are our adequate national and State animal preserves?" The importance of the elk herds in the Yellowstone as a source of supply for restocking other regions is demonstrated by a report prepared by the Biological Survey which shows that nearly 75 per cent of the 4000 elk which have been transferred by Federal and State authorities during the last 10 years have been shipped from the Yellowstone National Park.

The formal dedication of the Grand Canyon of the Colorado took place, April 30.

FOREIGN COUNTRIES. After the visit of the King of the Belgians to the Yosemite and the Grand Canyon the Belgian embassy declared that one result of his visit would be the establishment of the first national park in Belgium. The tract selected by the King was known as Herzogenwald, or the Duke's Forest, in the neighborhood of Malmédy, on the Belgian-German frontier, and is the highest spot in Belgium. Australia has long been in the forefront of the national-park movement overseas, and the Australian National Park in the district of Illiwarra in New South Wales, bordering on the Pacific Ocean, has a long-established reputation. Representatives of the government of Spain have in the past been studying American methods of national-park administration with a view to the establishment of national-park areas in that country. Italy had a law in preparation for the formation of a national park in Gran Paradiso,

an area of more than 35,000 hectares, of which 2200 were offered by the King of Italy; it was planned to make this a perpetual wild-game reserve. France has a number of excellent national parks, such as those of Oisans, of Peguere, of Esterel, and the Forest of Fontainebleau. Germany has already expressed keen interest in the national-park movement, and inquiries have been made by the Japanese officials regarding the extent of our national-park development. Switzerland has 1, and Sweden 10 national parks. The Argentine Republic, next to Brazil the largest republic in South America, has a national park of great beauty in the comparatively recently established L'Iguazu National Park. The supreme characteristics of this remarkable national-park area are the waterfalls, the total height of which is 60 meters, and of some double falls 30 meters each; the total length of the cataracts is 4000 meters. Canada's national parks are well known; they constitute one of the greatest assets of her people. Canada has felt that putting money into her national parks has been an investment and not an expenditure. Her national-park bureau was created in 1911, when all the parks, both scenic and historic, were placed under one control. The Canadian park movement resulted first from an endeavor to appraise and then to conserve her natural resources, and secondly from recognition of the need of large recreation areas.

PARSIFAL. See **MUSIC, Opera.**

PARSONS, ALFRED. British landscape painter, died, January 16. He was born at Beckington, England, Dec. 2, 1847, and worked for a time as clerk in the banking department of the post office. After 1867 he devoted himself to painting and became an exhibitor at the Royal Academy and other exhibitions. One of his early successful pictures was "When Nature Painted All Things Gay" (purchased by the Chantrey Fund in 1887). He made illustrations for *Harper's Magazine* and many other publications and coöperated in this work with E. A. Abbey. Among the works illustrated by him may be mentioned: "The Quiet Life"; "Warwickshire Avon"; "The Danube from the Black Forest to the Black Sea" (with F. D. Millet).

PATTERSON, JOHN HENRY. Brigadier-general, United States army, died at Selkirk, N. Y., October 5. He was born in New York City, Feb. 10, 1843, entered the Civil War in 1861 as first lieutenant of New York Volunteers, and distinguished himself in the battle of the Wilderness. He fought throughout the Spanish-American War during which he was raised to the rank of brigadier-general Jan. 18, 1899, retiring in the following month on account of wounds received in the battle of El Caney in Cuba. In 1897 Congress awarded him the medal of honor for his distinguished service in the battle of the Wilderness.

PAVEMENTS. See **ROADS AND PAVEMENTS.**

PEABODY MUSEUM. The field work of the Peabody Museum of Harvard University during 1920 has been confined principally to Arizona and Africa. Mr. S. J. Guernsey conducted explorations in the caves and rock-shelters in the Marsh Pass region of the Southwest, and has secured important collections and data relating to the so-called Basket-makers, who apparently occupied the region before the Cliff-dwellers. Mr. George Schwab, an Associate in Anthropology of the Museum has been carrying on re-

search work among the Camaroon tribes of West Africa, and the Museum has already received a valuable ethnological collection secured by him. Other important collections have been received; perhaps the largest one, composed of several hundred specimens, from the Balkan States and the Near East was presented by Mr. Herbert de Roth. An interesting collection, largely from the Pueblo region of the Southwest was the gift of Mr. Samuel K. Lothrop. The report on the Museum's exploration of the "Indian Village Site and Cemetery near Madisonville, Ohio," has been published. The following papers will soon be issued: "A Maya Grammar," by A. M. Tozzer; "A Possible Solution of the Number Series on Pages 51 to 58 of the Dresden Codex," by C. E. Guthe; and "Basket-maker Caves in North-eastern Arizona," by S. J. Guernsey and A. V. Kidder. Four large exhibition cases have been added during the year for the North American collections. In these have been installed ethnological specimens of interest from the Northwest Coast tribes. Two models of Stonehenge, the most noted of the stone circles of England, have been prepared and placed on exhibition. Director of the Museum, Mr. C. C. Willoughby.

PEACE AND ARBITRATION, INTERNATIONAL. See **INTERNATIONAL PEACE AND ARBITRATION.**

PEACE MONUMENT. See **INTERNATIONAL PEACE AND ARBITRATION.**

PEAKE, ARCHIBALD HENRY. Australian official, died, April 20. He was born in London in 1859, and was taken to South Australia with his parents in 1862. He was elected to parliament in 1897 and held cabinet positions after 1905. In 1909 he was prime minister, treasurer, and minister of education and he held the same office again in 1912-15; meanwhile in 1909-10 he was prime minister, commissioner of crownlands, and minister of education.

PEARY, ADMIRAL. Discoverer of the North Pole, died at Washington, D. C., February 22. He was born in Pennsylvania, May 6, 1857, and after completing his college course became a land surveyor on the Saco River. Then, after a brief service in the United States Coast and Geodetic Survey, he competed successfully for entry into the corps of civil engineers of the navy, obtaining his commission in 1881. His interest in polar discovery was awakened by Nordenskjöld's book on Greenland and he determined to discover the character of the interior of Greenland. After an expedition in 1886; he was stationed in Philadelphia where he interested the Academy of Natural Sciences in his schemes. Another expedition to Greenland in 1891 brought results that aroused public interest. From 1898 to 1902 occurred the journeys made familiar to the public by the adventures and narrow escapes of Peary and his party. This expedition proved Greenland to be an island and at the same time indicated that it was unsuitable as a starting place for the march to the pole. After some difficulty in obtaining public support, he succeeded in organizing a new expedition in 1905 and set sail in the *Roosevelt*, but although he reached the farthest north, he did not succeed in his purpose. The final expedition started in 1908 and resulted as is well known in the discovery of the Pole on April 6, 1909. The dispute over the question of priority with Dr. Cook was generally decided in scientific circles in Peary's favor.

PELLAGRA. We do not seem to be making much progress in solving the riddle of this chronic and often fatal malady, for every hypothesis, however plausible it may be for the existence of the disease in one country or period, is apt to break down when applied to the disease in some new community. Thus the affection has now invaded California and has attacked people who in theory should have been immune to it. That is, people who are well-to-do and have plenty of food of all classes. Recently numerous experiments in Mississippi and other Southern states on prisoners, the insane in asylums, orphans in institutions, etc., have shown that an unbalanced diet consisting almost wholly of cereals which are usually finely milled will surely produce the affection in a short time, the latter subsiding promptly on changing the diet. But in Roumania, where the disease has always been prevalent off and on, a poor crop of maize which leads to the use of low grade and falsified forms, has as in earlier years been the sole and sufficient cause, thus pointing to the activity of some causal factor not present in good maize, whether something omitted or some poisonous ingredient. In the Southern States the well-to-do victims have been found in some cases to dislike and refuse to eat articles like eggs, meat, and milk, but this does not explain all cases and it is also true that on a full diet recovery does not set in with the promptness and completeness expected. Hence we are forced to conclude that while an insufficient diet, poor perhaps in vitamins, is the strongest kind of a predisposing cause some exciting factor is needed to precipitate the disease. A case has recently appeared in France, near Paris, in a native whose diet was of the type which invites the disease. There should on the dietetic hypothesis have been other cases. During the war there were Italian laborers in the town and the possibility is assumed that the native might have received some infection through the mosquito, as other rare diseases were propagated in similar fashion. In parts of Italy the disease flourishes, but in the present case the home of the Italians was not known, and there was no information as to their health.

PELOUBET, FRANCIS NATHAN. Clergyman and writer; died, March 28. He was widely known as one of the leaders of the Sunday School movement in the United States. He was born in New York City, Dec. 2, 1831; graduated at Williams College in 1853 and at the Bangor (Me.) Theological Seminary in 1857. Ordained to the Congregational ministry, he was pastor in Massachusetts parishes during many years. From 1875 to 1920, he edited *Selected Notes on the International Sunday School Lessons* (44 annual volumes of which more than 2,000,000 had been sold at the time of his death). He wrote a number of works on Bible interpretation and was engaged in the revision of *Smith's Biblical Dictionary*, and the *International Biblical Dictionary*. He published the *Treasury of Biblical Information* (1913); and *Oriental Light* (1914).

PENANG. One of the Straits Settlements (q.v.).

PENFIELD, SMITH NEWELL. American composer, died in New York, January 7. He was born in Oberlin, O., April 4, 1837. From 1882 he lived in New York as organist at various churches. His compositions consist of much

sacred music, some orchestral works and chamber-music.

PENNSYLVANIA. POPULATION. According to the preliminary report of the census of 1920, there were 8,720,017 residents in the State, Jan. 1, 1920, as compared with 7,665,111 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 202,256, a falling off of 7.8 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years 1919 and 1920:

Crop	Year	Acreage	Produce Bu.	Value
Corn	1920	1,490,000	67,050,000	\$67,050,000
	1919	1,536,000	72,192,000	108,122,000
Buckwheat	1920	232,000	4,176,000	5,011,000
	1919	230,000	4,968,000	6,955,000
Oats	1920	1,175,000	45,825,000	80,244,000
	1919	1,189,000	86,859,000	29,487,000
Wheat	1920	1,524,000	25,284,000	42,983,000
	1919	1,664,000	29,055,000	62,758,000
Rye	1920	166,000	2,656,000	3,718,000
	1919	180,000	2,880,000	4,522,000
Tobacco	1920	40,000	*60,400,000	12,080,000
	1919	41,000	*54,120,000	9,200,000
Hay	1920	2,837,000	*3,970,000	93,190,000
	1919	2,844,000	*4,122,000	98,856,000
Potatoes	1920	317,000	36,455,000	45,204,000
	1919	308,000	30,800,000	47,432,000

* Pounds. * Tons.

ANTHRACITE OPERATIONS. A preliminary statement of the general results of the census of Pennsylvania anthracite operations for 1919 in comparison with that for 1909 issued by the Bureau of the Census showed a decrease in the number of breakers and also in the number of wage earners employed. The number of wage earners decreased from 169,174 to 147,069, or 13 per cent during the decade, 1909 to 1919, while the wages paid showed an increase from \$92,169,906 to \$210,202,511. For operating cost a decided increase was shown. The quantity of coal produced showed but a slight increase over that for 1909, this increase being but 6,302,000 tons, or 8.8 per cent, while the value of the coal produced increased from \$145,881,000 to \$364,243,000. The totals were as follows:

	1919	1909
Number of reporting establishments	1250	1
Number of plants		
Breakers	256	305
Mines	335	1
Culm washeries	79	52
Dredges	81	63
Number of persons employed		
Salaried employees	6,972	4,302
Wage earners	147,069	169,174
Invested capital	\$432,391,597	\$246,713,318
Expenses (selected items)		
Salaries	13,024,557	4,572,489
Wages	210,202,511	92,169,906
Materials and supplies	60,098,707	23,472,809
Fuel	12,334,449	
Power purchased	1,868,915	3,189,279
Contract work	1,582,327	1,701,514
Rent and royalties	11,762,958	7,969,785
Taxes	14,066,012	3,356,809
Production		
Total tons (gross) produced	78,566,868	72,215,273
Value at mines	364,243,423	145,880,526
¹ Number of individual reports furnished by 200 operators.		
² Comparable figures not available.		

FINANCE. The figures for the year ending, Nov. 30, 1920 were as follows: Balance Nov. 30, 1919, \$17,990,712; receipts, corporate taxes, etc., \$62,071,294; proceeds from sale of State Road

Bonds, \$11,800,000; total, \$91,862,006; disbursements, \$74,960,112; balance in Treasury, Nov. 30, 1920, \$16,901,894.

EDUCATION. In 1920 the pupils in the public schools of the State numbered 1,616,387 and the teachers, 44,862. The average salary of teachers was \$107 a month.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 1,218,215; Cox (Democrat), 503,202; Debs (Socialist), 70,021; Watkins (Prohibitionist), 42,612; Christensen (Farmer-Labor), 15,642; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 703,734; Wilson (Democrat), 521,784; Benson (Socialist), 42,637; Hanly (Prohibitionist), 28,525. The vote for United States Senator was: Penrose (Republican), 1,067,989; Farrell (Democrat), 484,362; Mrs. Leah C. Marion (Prohibitionist), 132,610; Wilson (Socialist), 67,316; Wheeler (Labor), 27,392; Jennings (Single Tax), 2110.

OFFICERS. Governor, William C. Sproul; Lieutenant-Governor, Edward E. Beidleman; Secretary of the Commonwealth, Cyrus E. Woods; Attorney-General, George E. Alter; Auditor-General, Charles A. Snyder; Treasurer, Harmon M. Kephart; Secretary of Internal Affairs, James F. Woodward; Superintendent of Public Instruction, Thomas E. Finegan; Adjutant-General, Frank D. Beary; Commissioner of Banking, John S. Fisher.

JUDICIARY. Supreme Court: Chief Justice, Robert von Moschizsker; Justices, Robert S. Frazer, Emory A. Walling, Alexander Simpson, Jr., John W. Kephart, Sylvester B. Sadler, William I. Schaffer.

PENNSYLVANIA STATE COLLEGE. A non-sectarian, co-educational institution, at State College, Pa., founded in 1859. The students enrolled for the summer session of 1920 numbered 1340 and for the regular fall session, 3059. There were 518 members in the faculty, including the research and extension staff. The productive funds of the institution amounted to \$500,000 at 6 per cent from the Federal Land Grant Fund. The income for the year was \$1,536,845. There were 75,600 volumes in the library. A new mechanical engineering laboratory was completed, as the first section of a new engineering unit. President, John Martin Thomas, D.D., LL.D.

PENNSYLVANIA, UNIVERSITY OF. A co-educational, non-sectarian institution of the higher learning at Philadelphia, Pa., founded in 1740. The enrollment for the summer session of 1920 was 1281 and for the regular fall session, 11,135. There were 1010 members in the faculty. The productive funds of the University amounted to \$9,035,037 and the income for the year was \$575,161. The library contained 503,572 bound volumes and 50,000 pamphlets. A School of Fine Arts was under construction and the important gifts were: From the estate of William B. Irvine, deceased, \$549,736, for the construction and equipment of an auditorium; the income from the balance for the maintenance of the building; and from the estate of Abraham S. Wolf, deceased, and Miriam H. Wolf, deceased, \$113,518, for the endowment of a ward in the University Hospital, to be maintained for the benefit of persons believed to be incurable. Acting Provost, Josiah H. Penniman, Ph. D., LL.D.

PENSIONS. See OLD AGE PENSIONS; and UNITED STATES.

PERAK. The most northerly of the Federated Malay States (q.v.).

PENTECOST, GEORGE FREDERICK. Clergyman, died, August 7. He was born at Albion, Ill., Sept. 23, 1842; studied at Georgetown University, Ky.; and was chaplain of the Eighth Kentucky cavalry in the Civil War. He officiated in parishes in Indiana, Kentucky, Brooklyn, and Yonkers, N. Y., and from 1914 at Philadelphia. Among his books may be mentioned: *Out of Egypt* (1884); *Bible Studies* (10 volumes, 1880-9); *Birth and Boyhood of Christ* (1896); *Forgiveness of Sins* (1897); *Systematic Beneficence* (1897); and *Precious Truths* (1898).

PENTON, ARTHUR POLE. British general, died August 28. He was born Oct. 6, 1854, and entered the Royal Artillery in 1873. He served with distinction in the Afghan War, 1878-80. From 1896 to 1901 he commanded the defense forces in New Zealand, and from 1912 to 1916 he was in command of the defenses of the southwest coast.

PERABO, ERNST. American pianist, died in West Roxbury, Mass., October 29. He was born in Wiesbaden, Nov. 14, 1845. From 1870-1900 he traveled through the United States as a concert-pianist. After that he lived in Boston, highly esteemed as a teacher. He published a number of compositions for piano and several transcriptions of orchestral works.

PEREZ-GALDOS, BENITO. Spanish novelist, died, January 4. He was born in the Canary Islands in 1845; began the study of law in Madrid in 1863; and was elected to the Royal Spanish Academy in 1899, having meanwhile completed in 1883, a series of 20 stories subsequently published in a collection under the title of *National Episodes*. In this collection he covered events ranging from Spain's struggle for independence in the Napoleonic period down through the return of Ferdinand VII, the Carlist War of 1833-40, the revolution of 1868, etc., to the close of the nineteenth century. The novels are described as remarkable for their fidelity to historical fact. He also ranked high in other fields, including romantic, realistic, and psychological novels. In his voluminous writings he showed revolutionary sympathies and frequently presented the contrast between the unthinking conservatism of Spanish life and modern progressive ideas. His writings in all fields have been widely read. A partial list of them follows: Novels, 1st, 2nd, 3rd, and 4th series. *Episodios nacionales* (1873-1907); *La Fontana de Oro* (1871); *El Audaz*; *Dona Perfecta* (1876); *Gloria* (2 vols.); *Marianela*; *La familia de Leon Roch* (12 vols.); *Sombra*; *La Descheredada* (1881); *El Doctor Centano*; *El Amigo Manso* (1883); *Tormento*; *La de Bringas*; *Lo Prohibido*; *Fortunata y Jacinta* (4 vols., 1887); *Miau*; *La Incognita*; *Realidad*; *Angel Guerra* (3 vols., 1890); *Tristana*; *La Loca de la casa*; *Torquemada*; *Nazarin*; *Halma*; *Misericordia*; *El Abuelo* (1898); *El Caballero Encantado*; *Casandra*; (plays) *Realidad*; *La de San Quintin*; *Los Condamados*; *Voluntad*; *La Fiera*; *Eleotra Mariucha*, *Barbara*; *Amor y Ciencia*; *Pedro Minio*; *Casandra* (drama).

PERKINS, GEORGE WALBRIDGE. American financier, died at Stamford, Conn., June 18. He was born in Chicago in 1862 and was employed by the New York Life Insurance Company at the age of 15. He drew attention by his energy

as an insurance agent and rose rapidly in his business until in 1901 he was chosen as a partner of Mr. Pierpont Morgan. He was one of the leading figures in the Morgan enterprises for nine years. Among his important financial achievements was the aid he rendered in the formation of the United States Steel Company and the Northern Securities Company. He retired from the firm in 1910 with a great fortune. After that he was director of the National Marine Company, and continued as the director or member of a large number of important concerns, including: National Harvester Company; Florida East Coast Railway; Great American Insurance Company; American Alliance Insurance Company, etc. In the Presidential campaign of 1912, he was one of the organizers and leaders of the Progressive party.

PERRIN, BERNADOTTE. Educator, died, August 31. He was born at Goshen, Conn., Sept. 15, 1845; graduated at Yale, 1869, and studied at the universities of Germany. He taught at Yale and at the Hartford High School from 1861 to 1881, when he became professor of Greek at the Western Reserve University, holding that chair until 1893. In that year he was appointed professor of Greek at Yale and from 1901 to 1909 was Lampson professor of Greek literature and history. He then became professor emeritus. He was president of the American Philological Association in 1897. He published many editions of Greek texts, including Homer and Plutarch, and he prepared several volumes of the Loeb Classical library.

PERRINE, ENOCH. University professor, died, April 11. He was born at Hightstown, N. J., Nov. 18, 1853, and graduated at Brown University in 1874. From 1886 to 1902, he was professor of rhetoric, and after 1902, was professor of English language and literature at Bucknell University.

PERRIS, GEORGE HERBERT. British journalist, died in London, December 23. His death followed his attendance as correspondent at the meeting of the League of Nations at Geneva. He was born at Liverpool, England, in 1866, and went into newspaper work in 1883, serving 10 years on the staff of the *Speaker* and eight years as editor of the *Concord*. Other positions held by him were that of editor of the *Tribune* and of the *Daily News*, and, during the late war, correspondent for the London *Daily Chronicle*. This last service was of special importance for he was present at most of the great battles. He was made a Chevalier of the Legion of Honor. After the armistice, he followed the army of occupation to Metz and Strasburg. He visited the United States on lecture tours several times, including a visit in 1919 when he lectured on the war.

PERROCHON, E. See FRENCH LITERATURE.

PERSIA. A monarchy of Asia, reaching from the Gulf of Oman to the Caspian Sea. Capital, Teheran.

AREA AND POPULATION. Estimates of area vary from 628,000 square miles to 635,135 square miles; estimates of population from 8,000,000 to 15,000,000 of whom about 2,500,000 are nomads. The chief cities with their estimated populations are: Teheran, 220,000 to 350,000; Tabriz, 200,000; Meshed, 60,000 to 100,000; Isfahan, 80,000; Kermanshah, 80,000. Of the nomads, 720,000 were Turks; 675,000 Kurds and Leks; 260,000 Arabs; and 234,000 Lurs. Vast

reaches of the country are absolute desert and at a high altitude, in which regions the average density of the population is said not to exceed 15 to the square mile. The central and eastern part is occupied by a salt desert, but in the north and west there are extensive forests. The only navigable river is the Karum. The Persians belong to the Shiite sect of the Mohammedans, the number being placed at about 8,500,000. The priests or ulema are exceedingly powerful and are under the authority of a chief priest, who resides near Bagdad. In 1920 it was reported that the schools numbered about 180 with 10,000 pupils of both sexes. There are numerous colleges supported by the State and a "political college" was opened in 1900 for the preparation of candidates for service in the foreign office.

PRODUCTION. The chief agricultural products are wheat, barley, rice, fruits, gums, drugs, wool, cotton, and silk. Of late years the production of opium and tragacanth has increased. The chief industry is the celebrated carpet industry which is centred at Tabriz, Sultanabad, Hamadan, and Kerman. Wool of a superior quality is raised in Khorassam. There are considerable mineral resources in Kerman and Khorassam, in the regions of the Persian Gulf, on the slope of Elbuz range and in the vicinity of the Isfahan and Nain. They include petroleum, coal, iron, copper, and lead, but development has been retarded on account of the lack of transport. The production of crude petroleum was under the control of an Anglo-Persian company and amounted to 583,200 tons in 1918; 874,000 tons in 1919; and 918,600 tons in 1920. See PETROLEUM.

According to consular reports America continued to be the best market for Persian rugs in 1919. When the restriction on the importation of rugs into the United States went into effect in April, 1918, the price of rugs decreased by at least 25 per cent. Likewise, when the restriction was removed in January, 1919, prices began to rise. By the end of the year the supply of rugs on hand at many places was almost exhausted and dealers reported an ever-increasing demand from the United States. During the year 1919, rugs valued at \$1,557,587 were invoiced at the Teheran consulate for shipment to the United States, as compared with \$390,117 in 1918 and \$875,811 in 1914. According to customs statistics, exports of rugs from the various districts of Persia for the fiscal year ended March 20, 1919, were as follows:

Aragh	\$380,766	Kurdistan	\$13,370
Belouch	4,327	Fars	56,787
Shiraz	148,751	Malayer	18,458
Hamadan	38,633	Teheran	537
Kashan	6,062	Afchar	19,209
Kerman	113,061	Turcoman	457
Kermanshah	10,335		
Khorassan	17,481	Total	\$858,234

COMMERCE. The chief products for export and import are shown in the following table from the *Statesman's Year Book* for 1920, in thousands of krans, in the years 1916-17 and 1917-18 inclusive. The kran equalled about 9 cents.

Imports	1916-17	1917-18	Exports	1916-17	1917-18
	1,000 krans	1,000 krans		1,000 krans	1,000 krans
Cottons	188,370	130,542	Fruits	90,426	48,112
Sugar	81,908	101,055	Carpets	13,471	7,130
Tea	23,141	13,508	Cotton	53,475	24,060
Gold and silver bars	19,011	8,508	Fish	9,870	3,445
Gold and silver coin	11,608	15,294	Rice	63,017	19,699
Petroleum	13,096	16,041	Gold and silver coins	2,186	7,482
Yarn	18,551	12,876	Gums	8,716	5,058
Flour	6,640	4,561	Opium	41,597	44,783
Woolens	2,773	4,411	Wool	19,290	8,098
Indigo and cochineal	4,072	6,112	Cocoons	2,092	265
Haberdashery	5,238	5,351	Skins	8,771	8,270
Rice	10,953	19,045	Animals	16,631	29,098
Spices	2,053	3,471	Silk stuff	3,004	987
Wool	1,869	3,071	Cottons	2,091	2,956
Animals	3,775	6,514	Hides	5,209	3,298
Silk goods	2,883	2,067	Silk	601	827
Tin, zinc, and lead	1,159	869	Wheat and barley	2,694	887
Tobacco	810	404	Pearls and other precious stones	887	1,597
Copper and nickel	309	5,584	Drugs	2,401	577
Iron and steel	2,839	17,814	Timber	692	2,031
Iron and steel manufactures	13,004	3,954	Tobacco	5,356	107,178
Timber	3,759	437	Petroleum	66,740	
Silkworm eggs	835				

The distribution of the foreign trade by countries in 1917-18 is shown in the following table from the *Statesman's Year Book* for 1920:

From or to	Imports 1917-18	Exports 1917-18
	£	£
Afghanistan	245,870	41,910
Germany	870	.....
Austria	1,440	.....
Belgium	3,670	.....
China	38,400	790
Egypt	401,170	983,490
United States	13,850	242,370
British Empire	10,437,900	3,691,310
France and colonies	89,060	1,600
Italy	4,620	.....
Netherlands and colonies	340,000	.....
Russia	3,587,240	5,402,540
Switzerland	900	.....
Turkey	232,800	561,820
Muscat	2,756	2,755
Oman	214,415	382,846

COMMUNICATIONS. Railway development began with the building of a small line six miles in length in the neighborhood of Teheran, which has been in the hands of a Belgian Company. Of late years the Russians built a line from Julfa on the Perso-Russian frontier to Tabriz, opened March 7, 1916. The total length of railway at the beginning of 1920 was placed at about 97 miles. By agreement of Aug. 9, 1919, outlined in the preceding YEAR BOOK, Great Britain and Persia were to cooperate in the development of railways and other means of transport. The only good highways down to 1903 were from Teheran to Kom and from Teheran to Resht, having a length of 91 and 220 miles respectively. Since then highways have been greatly extended and after 1916 many routes were made passable by motor cars. The principal trade routes are by way of Trebizond, Resht, and Meshed, to Russia; Khorassan and Seistan to India; Kermanshad to Bagdad; Bushire to Ispahan; and Teheran and Bender Abbas to the interior.

DEFENSE. By the Anglo-Persian agreement above mentioned it was provided that there should be a uniform military force under British officers. In April, 1920, an Anglo-Persian military commission recommended that the Persian government should assume control over the South Persia Rifles and Cossack Division, and that in the future there should be a military force of 43,000 men, under British officers and staffs until Persian officers should be sufficiently trained. The South Persia Rifles consisted in April of

two brigades under British and Persian officers numbering, respectively, 47 and 190 and with 5400 men (Persians). The Cossack division, was created in 1919 out of the Cossack brigades established under Russia officers before the Bolsheviks came into power. It consisted of 56 Russian officers, 202 Persian officers, and 7856 Persian troops. There is also a police service at the capital consisting of 8400 men.

GOVERNMENT AND HISTORY. Down to 1906, Persia was an absolute monarchy similar in form to that of Turkey. In that year the people having demanded representative institutions an attempt was made to establish a national council or Mejlis, but there followed a long period of disturbances and after many vicissitudes the Mejlis ceased to exist as a law-making body, November, 1915. For an account of the constitutional difficulties see preceding issues of YEAR BOOK. The government is under the Shah of Persia, who in 1920 was the Sultan Ahmed Shah, born Jan. 20, 1898. A cabinet was constituted August, 1917, under the Prime Ministry of Vossough-ed-Dowleh.

At the beginning of the year the Bolsheviks on the Persian frontier were reported to be advancing and threatening Khiva. There were rumors of a large concentration of Bolshevik troops in that region. Early in February it was learned that the Persian government had opened the way to a British syndicate to survey a railway from the starting point of the Mesopotamian line, and work on it was as reported begun soon afterwards. At the beginning of May Bolshevik forces appeared on the frontier between Persia and the Soviet republic of Azerbaijan. They found the way open to an attack on Persia after the revolution in Baku in April, which had brought the Azerbaijan government to their side. Before the end of the month, having seized the Persian port Enzeli on the Caspian Sea, they were threatening to remain in the country. It was believed that Northern Persia was almost at the mercy of the invaders and it was also feared that the Red propaganda had been spread widely throughout Persia. These matters which were reported with various comments in the press led to a demand that the British government should reveal what the Persian situation actually was. See GREAT BRITAIN.

PERU. A republic of South America. Capital, Lima.

AREA AND POPULATION. Area estimated at from 679,600 to 723,461, the latter including the department of Tacna. Population figures have been based on old estimates, no census having been recently taken. In 1920 a new census was projected, but its results were not available at the close of the year. The number of inhabitants has been placed at from 4,500,000 to 4,620,201. Lima had a population according to the census of 1913 of 143,500, but later estimates placed it at over 200,000. Other important cities with estimates of population are: Callao, 34,346, and Arequipa, 35,000 to 40,000. The above estimates of population do not include uncivilized Indians, whose numbers are not known. For details, see preceding **YEAR BOOKS**. The Peruvian government took special measures to encourage immigration in 1919. In 1920 there was a prospect of increased immigration from England and Germany. The following information in respect to education was supplied by the *Pan-American Union* for 1920: In 1919 there were in operation in Peru, under the bureau of public instruction, 2880 primary schools, 29 colleges of secondary instruction, and three normal schools. Of the primary schools 138 were for boys, 134 for girls, and 2608 mixed schools, employing 4284 teachers, and having an average attendance of 195,689 pupils. The school census of the Province of Lima shows 16,275 pupils, of which 9060 are males and 7215 females.

PRODUCTS. The chief product has been sugar. According to Peruvian experts the sugar was richer in Peru than in Cuba, Brazil, or Argentina. In 1919 the exports of sugar amounted to \$40,030,850. Cotton also had a very high reputation in the markets of the world. The rubber industry, formerly important, has latterly declined on account of the competition of Java and Sumatra. According to present indications the important product seems likely to be petroleum, recent investigations indicating a great petroleum deposit in the region watered by the river Madre de Dios and its branches. In 1919 cotton exports amounted to \$33,000,000. Irrigation was much needed in the agricultural region, experts declaring that the cultivatable area could be increased in that manner by 300,000 hectares. In 1918 the mineral production of Peru was valued at 8,324,960 Peruvian pounds, consisting of the following products: Coal, 346,226 tons; petroleum, 335,002 tons; gold, 1793 kilos; silver, 304,255 kilos; copper, 44,414 tons; lead, 632 tons; mercury, 1500 kilos; vanadium, 2183 tons; tungsten, 243 tons; antimony, 323 tons; molybdenum, 4 tons; borates, 523 tons; salt, 26,663 tons; and mineral waters, 128,333 litres.

COMMERCE. The value of the foreign commerce of the republic for 1911-1918 was as follows:

Years	Imports	Exports
1911	\$26,465,224	\$36,119,264
1912	25,015,480	45,871,504
1913	29,631,038	44,409,610
1914	23,495,122	42,668,450
1915	15,064,470	68,729,930
1916	42,256,551	80,497,088
1917	65,711,627	90,728,179
1918	47,229,932	97,196,634

The foreign trade of Peru for the calendar year 1919, reached the unprecedented total of \$190,296,024. The imports were valued at \$59,389,987 and the exports at \$130,906,037. Compared with 1913, the imports doubled and the

exports almost trebled, the increase for 1919 amounting to a fraction over 100 per cent for the imports and 194 per cent for the exports. The imports in 1919 were larger than ever before with the sole exception of 1917, when the receipt of \$13,505,068 in gold bullion and from the United States swelled the total of imports to \$65,711,624. In 1919 the imports of the precious metals (gold bullion) were only \$1,459,809, the imports of merchandise being larger than ever. The principal articles imported were the following, in the order of their importance: Machinery, iron and steel, coal and coke, cotton cloth, wheat, chemicals and medicines, jute fabrics, lumber, agricultural machinery, automobiles, cement, lard, electrical machinery and apparatus, instruments and tools. Manufactured articles represented 47.5 per cent of the total imports of merchandise; foodstuffs and beverages, 16.9 per cent; raw materials, 15.5; live animals, 0.1 per cent. The principal articles exported in 1919 were: Sugar, 599,926,528 pounds, valued at \$40,446,820; cotton, 87,550,742 pounds, value \$33,763,816; copper matte, including matte of copper and silver and of copper and gold, 40,903 metric tons, valued at \$23,422,114; petroleum, 256,327 metric tons, value \$11,291,828. The aggregate value of these four articles in 1919 was \$108,924,578; representing 83.2 per cent of the total value of exports. Compared with 1918 the export value of sugar was nearly doubled in 1919, although the quantity exported had increased only 45 per cent. The exports of sugar in 1918 were 436,489,221 pounds, valued at \$20,257,660, or \$4.64 per 100 pounds. In 1919 sugar was valued at \$6.74 per 100 pounds. Cotton was valued uniformly at 38.6 cents a pound in both years, but the quantity exported in 1919 was much larger. The exports in 1918 had been 47,448,624 pounds, valued at \$18,301,992. Copper matte was the only one of the four leading articles of export that showed a decrease in both quantity and value in 1919 as compared with 1918. The exports in 1918 were 44,251 metric tons, valued at \$28,370,191, or about \$641 per ton. In 1919 the average value per ton declined to \$573. The exports of petroleum increased in both quantity and value. The exports in 1918 had been 182,191 metric tons, valued at \$6,887,961, or about \$37.80 per ton. In 1919 the average value per ton was \$44. In 1918 the exports were valued at \$97,196,635. The exports in 1919 totaled \$130,906,037, showing an increase of \$33,709,402, or 34.7 per cent over the preceding year. This enormous increase is explained partly by the increased demand for raw materials abroad after the war and partly by the fact that by the end of 1918 large quantities of cotton, sugar, and other products contracted for during that year had accumulated in warehouses, owing to lack of tonnage; and could not be exported until 1919.

The foreign trade of Peru for 1918 and 1919, by countries of origin and destination, is shown in the following table. The Peruvian pound was converted at the normal rate of \$4.8665.

Countries	Imports		Exports	
	1918	1919	1918	1919
Europe:				
France	\$656,079	\$744,662	\$66,895	\$1,871,164
Germany	2,146	545	.....	246,187
Italy	673,378	543,179	.....	255,516
Spain	989,311	1,853,563	24,843	77,922
United Kingdom	7,622,822	8,010,001	30,826,713	41,079,791
Other Europe	171,865	165,110	.....	212,029
North America:				
United States	25,639,973	36,740,396	45,253,442	60,827,522
Canada	315,300	.....	.....	2,014,308
Mexico	49	16,960	703,686	18,712
Central America	522,638	317,680	355,775	593,557
Cuba	145,620	130,617	3,630	136
Trinidad and Jamaica	2,083	2,750	.....	.....
South America:				
Argentina	212,403	342,709	2,796,048	2,961,075
Arica, Tacna, Iquique	80,142	168,916	1,043,382	1,076,334
Bolivia	34,995	28,255	1,800,284	2,317,987
Brazil	135,865	96,269	550,124	531,928
Chile	3,487,869	3,322,024	12,298,327	15,726,757
Ecuador	430,359	349,780	322,055	258,669
Other countries	46,801	18,687	388,750	130,627
Asia:				
British India	2,300,219	2,506,126	2,034	.....
China	19	41,370	.....	.....
Hongkong	1,805,165	1,736,036	.....	.....
Japan	1,328,725	1,542,233	337,073	444,462
Australia	255,880	881,007	.....	.....
Africa (Canary Islands) .....	.....	1,187	.....	.....
Countries not specified	370,029	329,925	.....	.....
Ships' stores .....	.....	.....	420,717	261,374
Total	\$47,229,935	\$59,389,987	\$97,196,635	\$130,906,087

The predominance of the United States in the foreign trade of Peru is clearly indicated by the table. In 1913 the United States furnished 28.8 per cent of the imports and received 33.2 per cent of the Peruvian exports. Its share in the imports rose to 54.3 per cent in 1918 and 61.9 per cent in 1919, while its share of the exports was about 46.5 per cent in both years. Peru imports a great variety of articles from the United States, the principal imports being machinery and other manufactures of iron and steel, manufactures of cotton, lumber, chemicals, electrical goods, automobiles, meat products, coal and coke, agricultural implements. Copper is the principal product exported to the United States, followed by cotton, wool, india rubber, mineral oils, and sugar. The great demand for Peruvian raw materials during the preceding five or six years gave Peru a large favorable balance and strengthened the position of Peruvian exchange. On Aug. 1, 1919, the Peruvian pound was quoted in New York at \$5.30, and by the end of the year had declined only to \$4.74.

During the first six months of 1920 the total foreign trade of Peru almost equaled that of 1918. The imports from January to July, 1920, were \$35,060,271, and the exports \$100,239,641. This showed a balance of trade in favor of Peru amounting to \$65,179,370.

FINANCE. No later figures covering the entire year were available than those in the preceding YEAR BOOK, which placed the ordinary receipts at £3,972,997 and the extraordinary receipts at £1,196,150; ordinary expenses, £2,680,767; extraordinary, £2,286,570. The standard of currency is the libra which is equivalent to the pound sterling or \$4.8665 in United States money.

GOVERNMENT. Under the new constitution promulgated January 18, the executive power is in the president elected for five years and not eligible for the succeeding term. The legislative power is in a senate of 57 members and a house of representatives of 128 members, the latter being in proportion of one to over 30 inhabitants. The change of importance in the new

constitution, which took the place of the old instrument of 1860, was the attitude toward religion. Peru has been the stronghold of the Roman Catholic church and no other form of religion was permitted by the State. In the new constitution while the Roman Catholic religion remained the religion of the people, the prohibition of public worship of other denominations was repealed. President in 1920, Augusto B. Leguia. As to the disputed provinces, Tacna and Arica, see the article CHILE, and as to the difficulty with Bolivia which arose in 1919-20, over Bolivian claims to a port in the province of Arica, see BOLIVIA.

PETROLEUM. In 1920 petroleum was an important consideration as never before in world affairs. In addition to its relation to industry, technology, and economics it was bulking large in the realm of world politics and was furnishing an element of friction and uncertainty in more than one quarter of the globe. This was due to the general realization that petroleum and petroleum products were essential to all commerce and industry, and that with shrinking supplies in many quarters new fields must be sought. Naturally between the United States and Mexico there was considerable difference of opinion as to the rights and privileges of American oil producers in the latter State, not to mention those of other nations, while the proposed action of Great Britain in regard to restricting the exportation and ownership of oil fields in territory assigned to it by the Supreme Council of the League of Nations, occasioned remonstrances in the United States, where equality of opportunity was urged. This was particularly true in the case of the oil fields in Mesopotamia and brought from the United States government a protest.

However, aside from political considerations the year 1920 was in every way notable in the petroleum industry the world over. The use of oil burning steamships increased, involving not merely current supplies, but also storage for fuel in various foreign ports, of course had its effect. There was the largest consumption and

production of petroleum ever known and prices reached their highest levels from which late in the year they receded. Oil exploration was active in many quarters of the world, though the unsettled conditions in southeastern Europe prevented the fullest exploitation of new as well as established fields. The American petroleum industry absorbed during the year 531,186,000 barrels of crude oil worth probably near \$1,500,000,000 against 430,541,000 barrels of about \$800,000,000 value in 1919. Production of crude oil in the United States in 1920 as shown by the preliminary figures of the United States Geological Survey was 443,402,000 barrels of an estimated value of \$1,360,000,000 in contrast to a production of 377,719,000 barrels valued at \$775,000,000 in 1919. The United States production in 1914 was 265,000,000 barrels, valued at \$214,000,000 and in 1911 220,000,000 barrels having a valuation of \$134,000,000. To make good the deficiency in home production the United States imported from Mexico in 1920 106,163,116 barrels, an increase of 100 per cent compared with similar imports in 1919, 52,751,033 barrels. American exports of mineral oil in 1920 were about 70,000,000 barrels, with a probable value of over \$500,000,000, a new high record which surpassed even the total shipments of the war years.

The total production of petroleum in the United States in 1920 according to the preliminary figures of the United States Geological Survey amounted to 443,402,000 barrels, and represented a gain of 17 per cent as compared with 1919 and 78 per cent as compared with 1913. These figures, representing the quantity of petroleum removed from producing properties, were subject to increase when the amount of oil consumed on the leases was known and after allowance was made for net changes in stocks held by producers on the leases. The 1920 production was valued at \$1,360,000,000 as compared with \$775,000,000 in 1919. Imports of petroleum during 1920 amounted to 106,175,000 barrels, more than double the imports of 1919 and were almost five times greater than the imports in 1913. These figures emphasized the growing dependence of the United States on foreign supplies.

(In barrels of 42 U. S. gallons)		Preliminary, 1920
State		
Oklahoma	.....	105,725,000
California	.....	105,668,000
Texas:		
Central and Northern	70,952,000	
Coastal	25,048,000	
Total Texas	.....	96,000,000
Kansas	.....	38,501,000
Louisiana:		
Northern	33,896,000	
Coastal	1,753,000	
Total Louisiana	.....	35,649,000
Wyoming	.....	17,071,000
Illinois	.....	10,772,000
Kentucky	.....	8,679,900
West Virginia	.....	8,173,000
Pennsylvania	.....	7,454,400
Ohio:		
Central and Eastern	5,285,000	
Northwestern	2,127,000	
Total Ohio	.....	7,412,000
Indiana	.....	932,000
New York	.....	906,000
Montana	.....	336,000
Colorado	.....	110,000
Tennessee	.....	12,700
		443,402,000

* Average of figures collected by the Standard Oil Company and the Independent Producers' Agency.

The annual summary of the United States Geological Survey recorded for December a halt to the long-sustained increase in the production of petroleum in the United States, which had been reported monthly throughout the year except for temporary checks in May and September. The daily average production during December amounted to 1,256,806 barrels, a decrease of a little more than 33,000 barrels a day compared with revised figures for November, but more than 200,000 barrels greater than the daily average production for December, 1919. Imports during December, amounting to 12,845,482 barrels, a daily average of 414,370 barrels, decreased almost a million barrels over the imports during November, but increased more than 8½ million barrels as compared with December of the previous year. Consumption of domestic and imported petroleum during December, estimated to have been 47,909,000 barrels, decreased almost 1,000,000 barrels as compared

SUMMARY OF U. S. PRODUCTION BY FIELDS (Barrels of 42 U. S. gallons)

Field	Preliminary, 1920		Preliminary, 1919	
	Total	Daily average	Total	Daily average
Appalachian	30,511,000	83,363	29,232,000	80,088
Lima-Indiana and Southwestern Indiana	3,059,000	8,358	3,444,000	9,486
Illinois	10,772,000	29,432	12,436,000	34,071
Mid-continent:				
Oklahoma-Kansas	144,226,000	394,060	115,897,000	317,526
Central and North Texas	70,952,000	193,858	67,419,000	184,710
North Louisiana	33,896,000	92,612	13,575,000	37,192
Gulf Coast	26,801,000	73,227	20,568,000	56,351
Rocky Mountain	17,517,000	47,861	13,584,000	37,216
California	105,668,000	288,710	101,564,000	278,257
	443,402,000	1,211,481	377,719,000	1,034,847

PRELIMINARY SUMMARY OF STATISTICS OF CRUDE PETROLEUM FOR 1920

(Department of the Interior, United States Geological Survey. Based on revised monthly reports)

PRODUCTION OF PETROLEUM IN THE UNITED STATES
The following figures show the quantity of petroleum removed from producing properties. Oil consumed on the leases and net changes in producers' storage are not included, except for California; these data are obtained by annual canvases and are comprised in the final statistics of production.

with the figures for November, and stocks increased more than 3,000,000 barrels. A gain of 2½ million barrels was made in stocks of Oklahoma-Kansas-Central & North Texas grade and of more than ¼ million barrels of Gulf Coast grade; smaller gains were recorded for stocks of other domestic grades except California and North Louisiana, there being a loss of 342,000 barrels in stocks of California grade.

In the calendar year 1920 the imports of mineral crude oil into the United States amounted to 106,175,289 barrels, of which Mexico supplied all but 12,173 barrels. This amount can be compared with 53,821,567 barrels imported in 1919 of which all but 70,534 barrels came from Mexico. This Mexican oil to take a single month as an example was divided in November, 1920, as follows: Light Mexican crude oil, 63 per cent; Heavy Mexican crude oil, 22 per cent; Topped Mexican crude oil, 15 per cent. In 1920 the exports of crude mineral oil from the United States amounted to 8,044,907 barrels, of which 6,472,133 went to Canada, as compared with 5,924,320 barrels in 1919, of which Canada took 5,277,568.

The consumption of domestic and imported petroleum during 1920 reached the unprecedented total of 531,186,000 barrels, yet it did not keep pace with the increase in available petroleum, and at the end of the year there was recorded a net increase of stocks of more than 10,000,000 barrels, of which pipe-line and tank-farm stocks of domestic petroleum amounted to 5,823,000 barrels and stocks of Mexican petroleum held in the United States by importers amounted to 4,523,000 barrels. Although for the entire country there was this total increase of stocks for the year, conditions in California were reversed, there being recorded for that State a net decrease in stocks of 8,212,000 barrels.

The following tabulation by the United States Geological Survey epitomizes data relating to crude petroleum for the years 1919 and 1920. The figures refer to barrels of 42 U. S. gallons:

RESUME FOR 1919		RESUME FOR 1920	
	Barrels		Barrels
Production ..	377,719,000	Production ..	443,402,000
Imports *	52,822,000	Imports	106,175,000
Total	430,541,000	Total	549,577,000
Consumption ..	418,777,000	Consumption ..	531,186,000
Exports	5,924,000	Exports	8,045,000
Added to domestic pipe line and tank farm stocks ..	6,140,000	Added to: Domestic pipe line and tank farm stocks	5,823,000
	430,541,000	Mexican stocks held in the U. S. by importers ...	4,523,000
			549,577,000

* Revised.

Prepared under the supervision of G. B. Richardson, U. S. Geological Survey.

OIL WELLS. The accompanying well data for the States east of California are based on information supplied to the United States Geological Survey by pipe-line companies. The data are only approximate, because a few pipe-line companies do not maintain lists of wells with which their lines are connected, and the data for these companies have been estimated on the basis of production per well per day. However, it was necessary to estimate less than 10 per cent of the total number of wells.

PRODUCING OIL WELLS IN THE UNITED STATES OCT. 31, 1920		
State	Approximate number of producing oil wells	Approximate production per well per day bbls.
California *	9,490	82.3
Colorado	70	4.1
Illinois	16,800	1.7
Indiana	2,400	1.1

State	Approximate number of producing oil wells	Approximate production per well per day bbls.
Kansas	15,700	7.4
Kentucky	7,800	3.1
Louisiana:		
Northern	2,560	31.6
Coastal	140	34.6
Total Louisiana	2,700	31.8
New York	14,040	0.2
Ohio:		
Central and Eastern ...	18,500	0.8
Northwestern	21,100	0.3
Total Ohio	39,600	0.5
Oklahoma	50,700	6.0
Pennsylvania	67,700	0.3
Texas:		
Central and Northern ...	9,400	22.9
Coastal	1,700	49.7
Total Texas	11,100	27.0
West Virginia	19,500	1.1
Wyoming and Montana ...	1,000	55.9
Total	258,600	4.9

* Reported by the Standard Oil Company and the Independent Producers' Agency.

It was estimated that about 36,000 wells were completed as against 28,462 in 1919 and 24,948 in 1918. On the assumption that the average cost for a completed well was \$20,000, the total cost of new drilling of completed wells in 1920 would amount to more than \$700,000,000. Outside of the oil industry the fact was not generally appreciated that 26 per cent of existing production in the United States was from new wells, which meant, at the prevailing rate of output, 120,000,000 barrels a year from new wells. Furthermore, which fact also was not generally understood, the principal supply of petroleum came from thousands of very small producers, the accompanying table showing that 258,600 producing oil wells in the United States had an approximate daily average capacity of 4.9 gallons each.

In order to take care of the increased demand for petroleum products during 1920, refinery construction was extended greatly. There were reported in operation at the end of October, 1920, 332 refineries having almost 1,700,000 barrels daily capacity, an increase of 42 refineries and 350,000 barrels daily capacity, compared with the 1919 showing.

As already stated the price of petroleum reached a maximum in 1920, but in the course of deflation and industrial depression it naturally was not maintained and receded during the year. The accompanying table gives the high price of 1920, the price on Jan. 1, 1920, and at the beginning of 1917:

	High, 1920	Jan. 1, 1920	Jan. 1, 1917
Pennsylvania	\$6.10	\$5.00	\$2.95
Corning	4.25	3.50	2.30
Cabell	4.46	3.42	2.10
Somerset, light	4.50	3.25	2.05
Ragland	2.60	1.75	.95
Lima	3.73	2.98	1.63
Princeton	3.77	3.02	1.67
Illinois	3.77	3.02	1.67
Mid-continent	3.50	2.75	1.69
Healdton	2.75	2.00	.80
Gulf Coast	3.00	1.50	.98
Canada	4.13	3.38	2.08

New Companies and Increase of Capital. It will be quite obvious in order to take care

of the increased demand, production, and distribution of petroleum and petroleum products throughout the United States and to take care of increased exports and imports there were required additional commercial facilities. According to the *Journal of Commerce* (New York), new enterprises in the petroleum industry during 1920 involved the incorporation of 1712 companies with an aggregate authorized capitalization of \$2,786,814,000. The number of companies organized was slightly greater than in the preceding year, when 1629 were launched, but the indicated investment showed a sharp decline, amounting to about \$1,000,000,000.

The monthly average of companies incorporated indicated investment and the indicated investments per company during the periods stated are as follows:

	Monthly	Company
Five months, 1914	\$7,647,400	\$497,000
Year, 1915	6,711,100	410,900
Year, 1916	34,978,800	1,748,000
Year, 1917	70,018,283	1,641,053
Year, 1918	35,873,300	524,900
Year, 1919	315,500,500	2,324,128
Year, 1920	232,234,500	1,627,812

The following table compares the record for 1920 with that for the months of 1919:

1919—	Number	Authorized capital
January	86	\$60,825,000
February	94	51,362,000
March	110	54,005,000
April	121	104,469,000
May	199	202,305,000
June	123	355,390,000
July	161	586,216,000
August	103	173,345,000
September	153	515,510,000
October	157	613,610,000
November	141	490,760,000
December	181	578,209,000
Total	1,629	\$3,786,006,000
1920—		
January	209	\$899,956,000
February	211	165,660,000
March	188	300,295,000
April	199	316,129,700
May	160	200,350,000
June	132	161,275,000
July	133	116,841,000
August	103	118,370,000
September	76	136,100,000
October	115	496,968,000
November	91	266,190,000
December	95	108,680,000
Total	1,712	\$2,786,814,000

In December, 1920, three companies were organized with an authorized capital of \$10,000,000 or greater. In November 6 companies of such proportions were organized, 8 in October, 6 in September, 2 in August, 4 each in July and June, 7 in May, 9 in April, 8 in March, 2 in February, and 7 in January, making the total for the year 66.

Like other industries Petroleum in the United States suffered from financial and industrial conditions and there was decreased activity during the year, not so much in the industry itself, but in the work of development and promotion. In the financial markets, stocks and bonds during the year were subject to the same liquidation which affected other securities. Not only did many newer flotations suffer from overproduction of stocks, but there was liquidation of substantial established issues. As distinct from the organization of new companies an important ten-

dency of the year was the putting out of new securities by the older major companies. For the first time some Standard companies issued bonds and preferred stocks which were disposed of on the general market to the disappointment of many stockholders who had looked for stock distributions. The Standard and other large companies were not forced to undertake such new financing to cover losses, but they were seeking to assemble additional funds for capital which they believed could be employed profitably in providing for expansion, which eventually would result in increased earnings, from which stockholders would benefit.

The discussion of real and alleged monopolies in the petroleum industry in the United States continued during the year, and a public report made to Congress by the Federal Trade Commission stated that the Standard Oil Company, through long time contracts, had a monopoly in the production, transportation and marketing of petroleum and petroleum products throughout the entire Rocky Mountain section.

According to this report "There is greater concentration in the control of production of crude petroleum in the Wyoming oil fields than in any other field in the United States," and it is also declared that the only other crude oil production in the region is the comparatively small production in Colorado.

"The Midwest Refining interests," the report continued, "are controlled by the Standard Oil Company of Indiana through contracts which expire Jan. 1, 1934. Standard companies now control the bulk of the crude petroleum produced in Wyoming. The Ohio company, a Standard company, has the largest owned production in the State, and in addition to this controls considerable quantities through working agreements. Admitted Standard interests and the Ohio company control about 93 to 97 per cent of the total production."

Two standard controlled companies, the Midwest Refining Company and the Illinois Pipe Line Company, were said by the commission to transport from 97 to 98 per cent of all crude petroleum marketed in Wyoming.

Taking up the refining situation, this report stated the Midwest Refining Company, the Utah Refining Company, and other Standard Oil refineries own and operate 90 per cent of the refining capacities operating on crude Wyoming petroleum. In respect to marketing the report asserts that Standard Oil marketing companies bought 90 per cent of the refined petroleum products of Wyoming in 1919.

The report, however, declared that rates filed by the Illinois Pipe Line Company "compare favorably in cheapness with pipe line rates in other fields."

PETROLEUM SPECIFICATIONS REVISED. At the end of the year the United States Bureau of Mines published Bulletin 5 of the committee on standardization of petroleum specifications, which contained in the latest revised form all of the specifications which had been adopted by the specifications committee for Federal purchases of petroleum products. It also gives very complete descriptions of the methods of testing adopted for each product.

These specifications supersede those previously published in Bulletins 1, 2, 3, and 4 of the committee. Bulletin 5 became effective Dec. 29, 1920. The following changes have been made:

The specifications for aviation gasoline were consolidated so that only two grades were specified. A specification for turpentine substitute was added. Burning oil specifications were practically the same as in the previous bulletins, with the addition of prime white kerosene, to be used where a less expensive oil than water white kerosene is suitable. The fuel oil specifications were completely revised and the old gravity specification eliminated. A viscosity requirement was set for each grade of fuel oil and the Saybolt "Furol" Viscosimeter adopted for testing all fuel oils.

Lubricating oil specifications were practically unchanged, but several new grades were added. Chief among these were three grades of recoil oil, the lightest of which was the same as the old specification for hydrolene. An additional grade of Liberty afro oil was specified. Other new specifications were those for transformer oil, car oil, locomotive oil and greases and paraffin wax. The cup grease requirements were modified to permit the use of vegetable oils and fatty acids in their manufacture.

In general the committee accomplished considerable work in revising the wording of these specifications to make them more definite. The methods of testing also were made more definite and brought into closer agreement with standard methods adopted by the American Society for Testing Materials and other societies.

THE MEXICAN PETROLEUM INDUSTRY. The value of the oil industry in Mexico (including physical assets) according to government statistics amounted in 1920 to some \$660,000,000, whereas that of the mining industry totaled only \$400,000,000. Furthermore oil occupied a large share of the exports to the United States and exceeded 100,000,000 barrels in 1920, as compared to 51,000,000 barrels in 1919. In 1920 there were 12 refineries in operation and others under construction, and concessions had been granted for numerous pipe lines, including one to the City of Mexico and one from the Atlantic to the Pacific Ocean across the Isthmus of Tehuantepec.

In addition to this commercial importance petroleum also serves as the principal source of support of the government. A high official of the Department of Commerce and Industry was quoted as saying in 1920 that the potential possibilities of wells then open were over 1,000,000,000 barrels a year, and that, beginning with January, 1921, the government's income from export taxes alone would amount to 15,000,000 pesos (\$7,500,000) monthly. This tax was to be paid by fewer than 30 producing companies. The same authority quoted by the *Engineering and Mining Journal* (New York) estimated there were 160,000,000 acres of known oil-bearing land in Mexico, of which fewer than 400,000 have been "tromped" over.

Any consideration of the oil situation in Mexico inevitably leads to a discussion of both national and international politics as well as economic and industrial relations. (See MEXICO.) Taking a stand on Article 27 of the new national constitution which declared that oil, until it has been brought to the surface, belongs to the government, the Government of Mexico and so-called independent companies sought to maintain their position as against what were known as the "Allied" companies. The latter held that this section of the constitution infringed upon

rights legally acquired previous to its promulgation. The "Allied" concerns include most of the important producers and most of the pioneers in oil development in Mexico. During the year, however, the Aguila Company, a British corporation, and next to the so-called Doheny interests the largest in the Mexican oil fields, besides being one of the earliest explorers, withdrew from the association, and was reported to be in sympathy with the Mexican government's contention.

Notwithstanding uncertain and unsettled conditions there was considerable exploration and preliminary activity during 1920 in Mexico. The tendency was to carry on exploration further to the south and during the last three months of 1920 considerable land was purchased in the states of Tabasco and Chiapas and southern Vera Cruz. Notwithstanding the government's insistence on its ownership of oil, leases for oil rights were being entered into between land owners and representatives of important companies on the ground in considerable numbers and amounts. Such action of course was speculative, for the value of these leases must depend in a large measure on the government receding from its plainly announced position. During the year 1920 there was great activity also in new oil concessions granted by the government, almost exclusively to newcomers in the field, as the older companies largely refused to handle concessions, protesting that they were illegal and in contravention of established rights and interests.

Some of these concessions covered millions of acres, and acting on them considerable development work was begun in Sonora, Lower California, Sinaloa, Guerrero, Puebla, and Oaxaca. British capitalists towards the latter part of the year began borings at Port Angel, on the Pacific Coast, where seepages and other external evidences of oil were abundant, although the territory had been repeatedly rejected by geologists. Considerable activity also was shown in the Mexican states bordering on Texas and Arizona, though no wells actually were brought in.

The Mexican government in 1920 was on record as favoring a broad and liberal interpretation of the law and denied any intention of making the law retroactive, but at the same time it was insisting on its rights of eminent domain and was not showing any disposition to abrogate Article 27 of the new constitution around which so many legal and other disputes centred.

BRITISH PETROLEUM PROGRESS. With the great demand and growing commercial importance of petroleum and petroleum products the world over it was inevitable that during 1920 there should have been a most zealous search for liquid oil in England, both by the Government Petroleum Development managers and by private interests. With but a single producing oil well, the Hardstoft, it was however considered intensely probably that others would produce in the near future. In Derbyshire and North Staffordshire there were several well sinking projects under way, and at the end of the year these were reaching interesting depths. Unavoidable delays had checked progress, but the general position was considered to be satisfactory. It was reported that at Heath, not far from the Hardstoft well, a very encouraging show of oil took place when the bore was down 3940 feet. Later 10 feet more was drilled, and it was expected that at

least some production would be obtained here. The officials of the Petroleum Department naturally regard this Heath show as a hopeful sign of eventual success.

British private enterprise was active in the search for liquid oil and several licenses to drill were issued. The first license granted was to Oilfields of England, in order that this company's property in the neighborhood of Kelham might be commercially exploited. The first well was down over 1200 feet, and by the end of the year there had been nothing to mar the hopes of the company as to the striking of oil at between 2000 feet and 3000 feet.

FRENCH OIL ACTIVITY. Under the provisions of decree issued during 1920 the *Compagnie Française des Transports de Mazouts et Pétroles* of Paris received permission to construct a pipe line between Havre and Paris, approximately 125 miles in length for conveying petroleum oils. This step was taken in view of the increased use of crude oil as fuel due to the coal shortage and the difficulties involved in the transportation of petroleum from the receiving tanks on the coast to the industrial centres in the interior. This concession permitted the use of public roads for the new pipe line, and provided that it must have a minimum capacity of 2400 metric tons of oil daily with reservoirs at each end capable of holding at least 6000 tons. Furthermore the plans must be approved by the Ministry of Public Works and one year after such approval the pipe line must be completed. A maximum rate of 46 francs per ton of oil was stipulated subject to readjustment by the ministry and the life of the concession was fixed at 50 years. The headquarters of the company must be in France for the duration of the concession, and the chief officers as well as at least half of the other administrators must be of French nationality. French materials only must be used unless it is impossible to secure them at reasonable prices and terms of delivery.

The general draft of a bill establishing a petroleum monopoly, on which M. Laurent Eynac, Commissioner for Liquid Fuel, was engaged was ready at the end of the year to be submitted to the approval of the cabinet. The bill, it was stated, would provide that the purchase and importation of refined oils and petroleum spirits should be the exclusive privilege of the state, and that permission to import raw oils should be subject to authorization by the proper authorities. A special license would be required for the exercise of internal trade and the refining industry. The prices to be paid to the state for oil and oil spirit concessions as well as the sale prices were to be fixed by the Ministry of Finance in agreement with the Ministry for Public Works.

ROUMANIA. In 1920 it was estimated that the Roumanian oil field was furnishing an average production of oil during the year amounting to 2200 tons per day. This was much less than the production before the war as the average yield in 1913 was 5237 tons per day, or about 500 tank cars, as compared to the 1920 output of 275 tank cars. The 1920 production was in fact less than that of either 1918 or 1919, and the quantity of oil and its byproducts available for export was reported low.

Furthermore there was a decline from the 1919 output at least for the first half of 1920 when about 215,000 tons of oil was produced in the Roumanian oil field, or about 50,000 tons less

than in the corresponding period for 1919. The Pratrova district was stated to be the main producer, leading with 166,000 tons. Damboritz produced 27,000 tons, Buzen 10,500, and Bacan 10,600. Labor troubles naturally reduced production. A five years' concession was granted by the Ministry of Industry and Commerce in June to a private Roumanian company, the *Industria Rumana de Petrol*, for the distribution of oil products.

BULGARIA. As a result of political uncertainty practically no oil was produced in 1920 as most of the oil companies operating in the country were anxious to secure confirmation by the Hellenic government of their titles to oil lands in Thrace.

OIL IN THE NEAR EAST. To this region the eyes of oil producers and exporters were turned in 1920 and commercial and political developments were closely watched when not actually encouraged or participated in. There was not merely the question of production and in this connection it was stated that the opening up of fresh supplies had fallen far below the ever-growing demands of the many great industries which depend on oil situated in eastern Europe and Asia and Africa. Typical of this situation was the constantly increasing use of oil in Egypt. At Port Said and Suez the number of ships in transit fitted with combustion engines in 1920 was observed to be rapidly growing, and naturally along with this went a corresponding decrease of those using bunker coal. The fuel shortage was so serious during 1920 in Egypt that the Anglo-Egyptian Oilfields Company was actively engaged in exploration work at various sites while production was maintained at the oil wells at Gemsah and Hasgada, on the Red Sea.

MESOPOTAMIA. The Anglo-Persian Oil Corporation of London, which had been engaged in refining oil at Mohammerat, in Persia, obtained certain rights and concessions for oil developments in Mesopotamia from the Turks which had been recognized by the present British authorities though little work apparently had been done in this region up to the end of the year. An oil refinery was in construction on the Tigris, 10 miles north of Bagdad, and it was stated that crude oil would be brought there from the Persian fields to be refined for the Bagdad market. See ALASKA.

PETTEE, JAMES HORACE. Missionary, died February 17. He was for many years missionary to Japan. He was born at Manchester, N. H., July 16, 1851; graduated at Dartmouth College, 1851, and at Andover Theological Seminary in 1877. Ordained the following year to the Congregational ministry, he proceeded at once to Japan as a missionary and was engaged in that field during the rest of his life. After 1915, he was president of the Japan Society for Christian Endeavor. Meanwhile, he had written extensively on Japanese subjects for the press and was after 1880 Japanese correspondent for the *Congregationalist* and the *Christian World* at Boston. He also wrote *A Chapter of Missionary History in Modern Japan* (1894).

PFEFFER, WILHELM. German botanist, died at Leipzig, January 31. For many years he drew to his lectures as large a number of foreign students including Americans as any other German professor of botany, especially in the field of plant physiology, of which science in its present form he was the founder along with

Sachs. He was born, March 9, 1845, the son of an apothecary, and studied at the universities of Göttingen, Marburg, Berlin, and Würzburg. He taught first at Marburg, then at Bonn and Basel, and from 1878 to 1887 at Tübingen. He then became a professor at Leipzig where he remained for the rest of his life. At the last-named university, he began his laboratory work in plant physiology. Aside from his important work in botany, he carried on investigations in osmosis which were of fundamental value to physical chemistry. He was the friend and neighbor for many years of Professor Ostwald. His list of publications is too long for repetition here. It began with papers in plant geography and plant embryology and contained monographs which have been read by students all over the world. The preparation of a jubilee volume in honor of his 70th birthday and the 50th year of his scientific work began in 1914, but it was completed on a smaller scale than originally planned, on account of the war.

PHILADELPHIA, PA. See GARBAGE; and MUNICIPAL GOVERNMENT.

PHILADELPHIA SYMPHONY ORCHESTRA. See MUSIC, *Orchestras* and *Novelties*.

PHILBIN, EUGENE. Judge, died, March 14. He was born in New York City, July 24, 1857, and studied at Roman Catholic colleges and at Columbia University. After 1886, when he was admitted to the bar, he practiced in New York. He was district attorney of the county from December, 1900 to January, 1901. In 1913 he became Justice of the Supreme Court of New York. He was prominent in Roman Catholic circles and in charity administration. In politics he was a Democrat.

PHILIPPINES. AREA AND POPULATION. The area of the islands is placed at 114,420 square miles. The last official census previous to 1920 was that of 1903 and was only an uncertain estimate. It placed the population at 7,625,426. A new census was being taken in 1920 for the date, Dec. 31, 1918, and preliminary figures were available in 1920. According to these the total population at the end of 1918 was 10,350,640, distributed among different nationalities as follows: Filipinos, 9,429,857; Chinese, 45,156; Japanese, 6684; Americans, 6405; Spaniards, 4015; English, 1063; Swiss, 451; Germans, 312; French, 218; and other nationalities, 1111. The following table gives the population of the city of Manila and the three main provinces; also its density per square mile:

Provinces	Area in sq. miles	Total population	Popula- tion per sq. mile
Manila	14	283,613	20,258
Cebu	1,667	857,410	459
Pangasinan	1,944	567,644	292
Iloilo	2,040	508,272	249

EDUCATION. The year 1919 was marked by a large increase in enrollment and in attendance. Compared with the figures for the school year 1918-19, there was an increase of 749 in the number of primary schools and an increase of 111 in the number of intermediate schools. There was no increase in the number of secondary schools, because no funds were available for that purpose. In 1919, as shown by the December statistics, there was an increase over the previous year of 104,560 pupils in the elementary grades, and of 307 pupils in the secondary grades. The total

annual enrollment of pupils in the public schools for the period June, 1919, to December, 1919, was 776,596. There is an intense interest among the masses of the people in the island in the public schools. A very widespread appreciation of the advantages of education exists, and is no less marked among illiterate parents than in any other class of society. The children themselves are quiet, orderly, and docile, learn rapidly, and seem much attached to the schools.

AGRICULTURE. The year 1919 was one of great prosperity in agriculture, in spite of droughts, floods, typhoons, and rinderpest, owing to the high prices for staple products. In value, the crops were far greater than ever before, being 458,000,000 pesos for the year ending June 30, 1919, as compared with 350,000,000 pesos for 1918 and 180,000,000 pesos for 1916. Of this sum, the rice crop accounted for 188,000,000 pesos and for the first time cocoanuts displaced abaca (hemp) in second place, amounting to 75,000,000 pesos, which was an increase of 77 per cent, and 206 per cent more than in 1914, and yet only 57 per cent of the coconut trees already planted are in maturity and in bearing. Sugar products came to 74,000,000 pesos, and hemp to 65,000,000 pesos, a decrease of 11 per cent in yield and 30 per cent in value for the year. Corn increased in yield to 37,000,000 pesos, being a rise of 102 per cent in value, and tobacco decreased in yield by 8 per cent but rose in value 14 per cent to 17,000,000 pesos.

COMMERCE. For the first time since 1913 the balance of trade was against the islands at the close of the year 1919. This amounted to 11,042,452 pesos. There was also a slight decrease in the volume of foreign trade. The imports amounted only to 237,278,104 pesos, while the exports amounted to 226,235,652, making a total volume of trade of only 463,513,756 pesos, which, compared with that of the previous year, which was 467,587,387 pesos, shows a decrease of 4,073,631 pesos, or about 1 per cent. This decrease in the volume of foreign trade was due mainly to the reduction of the importation of cotton goods from 58,016,844 pesos in 1918 to 38,644,173 pesos in 1919; of rice from 16,433,585 pesos in 1918 to 8,817,362 pesos in 1919; and to the reduction of exports of hemp from 116,383,100 pesos in 1918 to 53,703,052 pesos in 1919; of copra from 10,377,020 pesos in 1918 to 8,839,376 pesos in 1919; and of sugar from 31,608,780 pesos in 1918 to 30,415,701 pesos in 1919. The greatest decrease was suffered by hemp and was due to the paralysis of the fibre market of the United States. The decrease in the export of copra is explained by the fact that much copra was crushed into oil by the mills there. While on the whole the foreign trade for 1919 was not very favorable, the islands were able to maintain some of the usual exports on their former level and to increase considerably the volume of the new ones. The exportation of coconut oil rose from 63,328,317 pesos in 1918 to 73,719,504 pesos in 1919; while that of tobacco soared from 27,169,826 pesos in 1918 to 31,390,084 pesos in 1919. The new exports—copra meal, embroidery, pearl buttons, sapan wood, shells, hats—increased respectively from 7255 pesos, 4,319,504 pesos, 181,330 pesos, 60,504 pesos, 556,994 pesos, 1,183,446 pesos in 1918 to 2,173,471 pesos, 6,913,001 pesos, 231,811 pesos, 111,484 pesos, 603,175 pesos, and 1,470,026 pesos in 1919. The general decrease in the volume of our foreign trade naturally affected trade

with the United States. The volume of trade with that country for the year under review amounted to only 264,288,113 pesos as against 295,943,059 pesos of the previous year, or a reduction of 31,654,846 pesos. The following table shows trade by countries in the calendar year 1919 in pesos:

with an aggregate net tonnage of 1,711,981 entered from foreign ports, as compared with 652 in 1918, 652 in 1917, and 705 in 1916, with an average net tonnage of 1,412,871, 1,456,163, and 1,559,346, respectively. The number cleared for foreign ports during the year is 719, with an aggregate net tonnage of 1,705,869. This was

	Imports	Per cent of total imports	Exports	Per cent of total exports	Total trade	Per cent of total trade
1. United States	150,982,829	68.68	113,305,384	50.08	264,288,213	57.02
Hawaii	4,057,758	1.71	526,437	.28	4,584,195	.99
Guam	14,848	.01	183,286	.08	198,134	.04
2. Japan	23,218,231	9.78	14,066,855	6.22	37,285,086	8.04
3. United Kingdom	5,081,506	2.14	32,029,743	14.16	37,111,249	8.01
4. China	14,810,425	6.08	7,574,430	3.35	21,884,855	4.72
5. Netherlands	209,245	.09	17,003,786	7.52	17,213,031	3.71
6. Hongkong	486,550	.20	14,396,440	6.36	14,882,990	3.21
7. France	8,170,845	1.34	8,252,958	3.65	11,423,798	2.46
8. Australasia	9,055,765	3.82	1,613,089	.71	10,668,854	2.80
9. French East Indies	8,028,757	3.38	2,427,675	1.07	10,456,432	2.26
10. Spain	1,872,254	.79	7,855,881	3.47	9,728,135	2.10
11. Dutch East Indies	7,690,649	3.24	551,379	.24	8,242,028	1.76
12. British East Indies	3,994,714	1.68	3,597,878	1.59	7,592,592	1.64
13. Siam	2,495,633	1.05	141,834	.06	2,637,467	.57
14. Switzerland	1,266,707	.53	81,213	.04	1,347,920	.30
15. Belgium	113	....	915,277	.41	915,390	.20
16. Germany	733,882	.31	....	....	733,882	.16
17. Canada	51,426	.02	430,013	.19	481,439	.10
18. Japanese China	188,711	.08	247,020	.11	435,731	.09
19. Italy	111,050	.05	226,054	.10	337,104	.07
20. British Africa	138,868	.06	7,094	....	145,457	.03
21. Norway	36,810	.02	800	....	37,610	.01
22. Denmark	36,667	.02	....	....	36,667	.01
23. Austria-Hungary	891	....	....	....	891	....
24. Sweden	11	....	....	....	11	....
25. Other countries	43,964	.02	801,131	.36	845,095	.18
Total	237,278,104	100.00	226,235,652	100.00	463,513,756	100.00

As will be seen from the above the total value of the imports for the year was 237,278,104 pesos, which was 40,079,681 pesos over that of the previous year, or an increase of 20.3 per cent. This was the largest on record in the history of the islands' importations. The principal products concerned in the increase were iron and steel and manufactures of the same, mineral oil, meat and dairy products, automobiles and parts thereof, wheat flour, coal, paper and manufactures of paper, leather and manufactures of leather, and other articles; while the importations of cotton and manufactures of cotton, as well as rice, showed a considerable decline. The chief exports in 1919 were cocoanut oil, hemp, tobacco, and sugar.

As was the case in 1918, in the year under review American vessels carried the greatest proportion of the Philippine trade, to say nothing of the fact that the trade carried by these vessels exceeded that carried by them during the previous year. British vessels ranked next in furnishing space to external commerce, likewise recording an increase over that for the year 1918. Japanese vessels occupied the third place in the carrying trade, further going on record as marking a decrease in their carrying capacity compared with their record of the previous year. Philippine vessels were in the fourth place on the list, making a slight progress in the trade by carrying more than 1,000,000 pesos' worth of our foreign trade over that reported for 1918. The volume of foreign trade carried by Philippine vessels had been increasing since 1916, notwithstanding the fact that there were but few vessels of Philippine registry engaged in the foreign trade. The number of vessels engaged in the foreign trade calling at Philippine ports of entry during 1919 was greater than that of the three preceding years. A total of 740 vessels

less than the number entered, owing to the fact that some of the latter had been registered for the coastwise trade.

HEALTH AND SANITATION. While the ravages of influenza in other oriental countries in recent years made the losses from the disease in the islands seem small, it is possible that the after-effects of this disease weakened the constitution of the inhabitants of these islands, for serious epidemics of cholera, smallpox, and dysentery occurred during the year. Smallpox, which seemed practically eliminated from the Philippines, broke out in 1918 in Manila and the provinces and assumed the proportions of an epidemic in the first half of 1919; during the 12 months there were 65,123 cases of smallpox in the archipelago, with 44,367 deaths, of which only 39 were in the city of Manila. The effects of the general vaccination of 1905 seemed to have worn off, and revaccination was undertaken, 360,712 vaccinated in Manila and approximately 7,500,000 in all. For the first time in the history of the serum section of the Bureau of Science, it was possible to meet the full demand for vaccine without delay; the output was more than doubled. Cholera also took a turn for the worse, with 24,337 cases in the islands and 17,261 deaths, of which 107 were in Manila. Another water-borne disease, dysentery, apparently endemic in all tropical countries, became epidemic in 1919, with 59,854 cases and 17,598 deaths, of which there were 414 in Manila. The only certain preventive measure against the outbreak of cholera and dysentery was the constantly increasing number of pure-water systems established in the towns, and the artesian wells, bored by the Bureau of Public Works; of these artesian wells, 176 were drilled in 1919, and only 13 of these were unsuccessful—a record year; there are in all 1568 of these wells now in operation,

an average of two to each of the 873 municipalities of the islands. The number of deaths recorded for the year 1919 is 328,226, with a rate of 34.26, as against 329,671 with a rate of 45.17 for 1903.

As a result of much activity devoted to the organization into sanitary divisions of all the provinces of Luzon and the Visayas which had not as yet been so organized, the provinces of Bataan, Cavite, Laguna, Samar, Sorsogon, and Ambos Camarines effected their sanitary organizations during the year, leaving Romblon alone unorganized on account of lack of funds. There were at the close of the year 36 health districts, each under the direct supervision and control of a district health officer. The services rendered by women's clubs and infant welfare institutions were of inestimable value to the country for the protection of early infancy. In the division of Mindanao and Sulu unregistered midwives received instructions from the district health officers, presidents of sanitary divisions, nurses, and midwives. The inspections made and instructions given with reference to sanitation and hygiene as well as the care of infants by members of these charitable institutions, together with the distribution of pamphlets and the giving of public lectures in even remote barrios, were important factors in the reduction of infant mortality in the Philippine Islands. Almost all the public and the private schools in the provinces were inspected, not only to examine the physical condition of the pupils, but also to improve the sanitary conditions.

FINANCE. The following table shows the balance, income, and expenditures in pesos during the years 1916-18, inclusive:

	Balance	Income	Expenditure
1916 . . .	10,234,116.77	45,704,855.69	40,906,813.13
1917 . . .	15,032,159.33	54,781,241.44	45,408,717.74
1918 . . .	24,404,683.03	68,690,105.13	57,496,043.63
1919 . . .	35,598,744.53	79,686,923.20	86,742,589.38

The increase in revenue was due principally to the receipts from operation of commercial and industrial units of the government, license and business taxes, larger earnings of the banks, revenue collected from the increased production of cigars and cigarettes, and increased imports of petroleum and gasoline and tax on income. In the operation of commercial and industrial units, there was a notable decrease of 1,844,148.64 pesos on account of the operation of chartered vessels. The budget system established in 1917 was recognized as efficient for the better understanding and more detailed analysis of the finances of the country as it makes public the financial condition of the government and brings about a coordination of and effects an economy in government expenditures. The system was adopted conditionally, with the object of observing its operation. The results of the trial had been found so excellent, it was believed that the time had come to adopt the system permanently by an act of the Legislature.

Governor-General in 1920, Francis Burton Harrison. See ANTHROPOLOGY.

PHILLIPS, FRANCIS CLIFFORD. Chemist, died, February 16. He had been a professor of chemistry at the University of Pittsburgh for 40 years, known especially for his work in the chemistry of natural gas. He was born at Philadelphia, Pa., April 2, 1850, studied at the University of Pennsylvania, and from 1875 to the

time of his death was professor of chemistry in the Western University of Pennsylvania, now the University of Pittsburgh. He retired from active service in the university in 1915 and was thereafter engaged in research. During the late war he made investigations in connection with the gas warfare service. He published in 1904 *The Methods of Analysis of Ores, Pig-Iron, and Steel used by the Chemists in the Pittsburgh Region*, and in 1903 a text-book on *Chemical German*. He left two uncompleted books on the *Life and Work of Joseph Priestley* and *Qualitative Gas Reactions*.

PHILLIPSBURG, N. J. See SEWERAGE AND SEWAGE PURIFICATION.

PHILLIPS UNIVERSITY, A non-sectarian, co-educational institution at East Enid, Okla., founded in 1907. The enrollment for 1920 was 1102. There were 52 members on the faculty. The productive endowment amounted to \$254,870. President, Isaac Newton McCash, LL.D.

PHILOLOGY, CLASSICAL. The conditions in the foreign book trade are still such that it is impossible to present anything more than a very fragmentary view of European publications in the field of classical philology. Thanks to the cost of paper and the rise in wages, prices of books published in England are, to the individual scholar, virtually prohibitive. For German books importing booksellers in this country will quote no prices prior to delivery. Even book-sellers in Germany decline to quote prices, or else, in the effort to offset the low exchange value of the mark and the high government export tax, quote enormous prices, exceeding those of the days before the Great War; charges for "packing and carriage" are extra. Foreign books reach this country only after long delays. Libraries, too, suffer from these conditions. Hence, this article will deal primarily with American work, then, to a less extent, with English work, and, finally, in very cursory fashion, with the work of other European scholars. It will include some things published in 1919, though it has not been thought worth while to use space by indicating this fact in each case. It has not been possible to see all the books listed; in such cases reliance has been placed on notices of them in reputable periodicals, or on signed reviews by competent scholars.

To the *Loeb Classical Library* (see YEAR BOOKS, for 1911-19) were added, on the Greek side, translations of Plutarch, *Lives* (the eighth and ninth of 11 volumes); by B. Perrin; Homer, *Odyssey* (the second and concluding volume); Thucydides (the first two of four volumes), by C. F. Smith; on the Latin side, Fronto, (two volumes), by C. R. Haines; Martial (two volumes), by W. C. A. Ker; Seneca, *Epistulae Morales* (the second of three volumes), by R. M. Gummere. For notices of these and other translations, not easy to enumerate, see "Recent Translations of the Classics (Especially in the Loeb Classical Library)," by C. Knapp, in *The Classical Weekly*, xiii.

It will be worth while to indicate the extent to which American scholars have participated in this Library: Aeschines, *Speeches*, C. D. Adams; Appian, *Roman History* (four volumes), Horace White; Boethius, E. K. Rand (with an English scholar, H. F. Stewart); Cicero, *De Officiis*, W. Miller; Dio Cassius (six volumes), E. Cary; Homer, *Odyssey* (two volumes), A. T.

Murray; Horace, *Odes and Epodes*, C. E. Bennett; Emperor Julian, *Works* (two volumes), Wilmer Cave Wright (Mrs. Wright); Livy (one volume), B. O. Foster; Lucian (two volumes), A. M. Harmon; Ovid, *Heroides and Amores*, G. Showerman; Ovid, *Metamorphoses* (two volumes), F. J. Miller; Plato (one volume), H. N. Fowler; Plautus (two volumes), P. Nixon; Plutarch, *Lives* (nine volumes), B. Perrin; Procopius (two volumes), H. B. Dewing; Seneca, *Epistulae Morales* (two volumes), R. M. Gummere; Seneca, *Tragoediae* (two volumes), F. J. Miller; Strabo, *Geography* (one volume), H. L. Jones; Suetonius (two volumes), J. C. Rolfe; Thucydides (two volumes), C. F. Smith; Vergil (two volumes), H. R. Fairclough; Xenophon, *Cyropaldia* (two volumes), W. Miller; Xenophon, *Hellenica* (one volume), C. L. Brownson.

In the *American Journal of Philology*, xl, 4-xli, were published "The Theory of the Homeric Caesura According to the Extant Remains of the Ancient Doctrine," S. E. Bassett (the author holds that caesura was not recognized in the classical period of Greek literature; caesura is a purely metrical matter; it does not mean a pause, either in rhythm or in sense. It is merely the conflict between the end of a word and the end of a foot); "Verbals in -tor, -ax, -dus, and -na," E. W. Nichols (an investigation of such words in Plautus, exclusive of the fragments); "Cicero and the *Poetae Novi*," T. Frank (the author maintains that the young men who gathered about Curio in politics, and the *poetae novi*, chief among whom were Calvus and Catullus, were closely associated with Cicero from 59 B. C. till the death of the most important among them); "The Literary Tradition of Gyges and Candaules," K. F. Smith (supplementing a paper in *American Journal of Philology*, xxiii, in which he reconstructed the plot of this popular tale, the author now studies the most notable feature of the later tradition of the tale, the increasing predominance in it of the two versions of the story given by Herodotus and Plato); "Why were the Jews Banished from Italy in 19 A. D.?", W. A. Heidel; "A Pun in the *Rhetoric* of Aristotle," L. Cooper; "Tacitus and Tiberius," G. A. Harter (the author holds that an unfavorable opinion of the character of Tiberius was current, independently of Tacitus; the latter made use of it, but did not create it); "Unlisted Fragments of Aeschylus," H. W. Smyth (a collection, with comments, of fragments of Aeschylus that have come to light since 1889); "Epicurean Determinism in the Aeneid," T. Frank (the author seeks to show that there is no proof in *Aeneid*, vi, that Vergil had abandoned his early adherence to Epicureanism; the semi-Stoic coloring of the book was used for artistic purposes); "Notes on the Text of Asclepiodotus," W. A. Oldfather; "Quintilian of Calagurris: An Essay," E. G. Sihler; "Names of Stinging, Gnawing, and Rending Animals, Parts I and II," F. A. Wood; "The Lover's Blindness," M. B. Ogle (the earliest examples of the satire on the lover's blindness are in Plato and Theocritus; in both writers the influence of the mime bulks large. Treatments of the matter by Cicero, Ovid, and various modern poets are considered); "Aphrodite: Mother Earth," W. S. Fox; "The Paracausithyron as a Literary Theme," H. V. Canter (a study, pursued through classical comedy, elegy, epigram, and lyric, of the *exclusus amator*); "The Arrow of Accetes," N. W. DeWitt

(the author argues that the games in *Aeneid*, v, are not funeral games; rather through them Vergil is trying to throw back into remote antiquity the popular associations at Rome of the goddess Fortuna with Caesar, as well as with the Roman State; the book deals also, he believes, with the reconciliation of Aeneas with his father's shade, a reconciliation that paves the way for the revelation which comes to Aeneas, in *Aeneid*, vi, through his interview with the shade of his father).

The following reviews in these volumes may be mentioned: of B. P. Grenfell and A. S. Hunt, *Oxyrhynchus Papyri*, Part XIII, by W. N. Bates; of H. A. Hoffman, *Everyday Greek—Greek Words in English, Including Scientific Terms*, by C. W. E. Miller; of J. Carcopino, *Virgile et les Origines d'Ostie*, by Lillie R. Taylor.

In these volumes are to be found also summaries of foreign classical periodicals: of *Philologus*, lxxv, 1-4 (1919), by G. D. Kellogg; of *Revue de Philologie*, xlii, 1-4, xliii, 1-2 (1918-19), by W. P. Mustard; of *Hermes*, liv, 1-4 (1919), by H. L. Ebeling; of *Rivista di Filologia*, xlviii (1919), by W. P. Mustard; of *Rheinisches Museum*, lxii, 3-4, by C. W. E. Miller.

From *Classical Philology*, xv, we mention the following articles: "The Importance of Hellenism from the Point of View of Indic-Philology. II," W. E. Clark; "Vergil's Apprenticeship, I, II," T. Frank (a study of the *Appendix Vergiliana*, the group of minor poems attributed by ancient tradition to Vergil's youth; Professor Frank shares the growing confidence of critics that most of these were in fact written by Vergil in his youth; he believes that we may use these poems in tracing the growth of Vergil's poetic powers. See below, in the account of *Harvard Studies in Classical Philology*, notice of an article by E. K. Rand. On the other side, note an article by W. R. Hardie, in *The Classical Review*; see below. Note also remarks by C. Knapp, *The Classical Weekly*, xiii, 145.); "A Semantic Note," C. D. Buck (a study of certain Greek words, and of the many sources of the notions 'forget,' 'die,' 'kill'); "The Sycophant-Parasite," J. O. Lofberg (a study of this character in the Greek New Comedy, in Plautus and Terence); "The Book Divisions of Thucydides," R. J. Bonner (the author rejects the view that Thucydides i-v. 26, the account of the Archidamian War, was published as a separate entity); "The 'Undated Lands' in Ptolemaic and Roman Egypt," W. L. Westermann; "Satire as Popular Philosophy," C. W. Mendell (a study of the *Satires* of Horace); "Mutiny in the Roman Army. The Republic," W. S. Messer; "The Elogium Duilianum," E. W. Fay (a criticism of a paper by T. Frank, in *Classical Philology*, xiv, "The Columna Rostrata of C. Duilius," outlined in the YEAR BOOK for 1919. The author agrees with Professor Frank in believing that the Duilius inscription was restored by an imperial commission, under Tiberius, but differs from him in holding that the inscription is a forgery); "Hittite an Indo-European Language?", C. D. Buck (an examination of the view, confidently set forth, in 1915 and 1917, by the Austrian scholar Hrozny, that this question should be answered in the affirmative. Professor Buck declares that the evidence in favor of this view is not even remotely comparable to that which we have in the case of "Tocharian" or "Kuchean," a language of Chinese Turkestan, which is held to

belong to the Indo-European family, though not to the Indo-Iranian branch; on the other hand, the evidence in the case of Hittite is vastly stronger than in the case of a number of languages—e.g. Lycian, Lydian, Eteocretan—whose Indo-European affinity various scholars assert); "Forerunners of Romance Adverbial Suffix," E. S. McCartney (a study of the use of various Latin nouns in the construction known as the ablative of manner, that is virtually as adverbs; these usages gave rise to adverbial suffixes like French *-ment*, Italian and Spanish *-mente*); "Inorganic Roles in Roman Comedy," H. W. Prescott (an argument that the general features of the technique illustrated by the employment of such rôles are Greek rather than Roman; they are found in tragedy, too); "Arrian's *Anabasis* and Book XVII of Diodorus," R. B. Steele; "Posidonius and the Sources of Pythagorean Arithmology," F. E. Robbins (in opposition to certain German scholars the author holds that, though it can be shown that Posidonius was interested in Pythagorean arithmology, and may have influenced some lines of its tradition, it cannot be proven that he was the author of any part of the general source of Theon, Anatolius, Philo, etc.); "Augustus' War in Spain (26-25 B. C.)," D. Magie; "Martial and Formal Literary Criticism," K. Preston; "Studies in the Iguvine Tables," R. G. Kent; "*Ethiologia* or *Aetiologia* in Suetonius De Grammaticis c. 4, and Quintilian i. 9," R. P. Robinson (the author, who is preparing a critical edition of Suetonius, *De Grammaticis et Rhetoribus*, decides for the reading *aetiologia*).

Important reviews in this volume are those of H. J. Edwards, translation of Caesar, *The Gallic War*, in the *Loeb Classical Library*, and of W. S. Teuffel, *Geschichte der Römischen Literatur*, vol. I, sixth edition, by C. H. Beeson; of A. E. Phoutrides, translation of *Kostas Palamas: Life Immovable. First Part*, by F. B. Hellems (the reviewer sees in Palamas a poet of high order, and finds the translation satisfactory); of J. T. Sheppard, *The Oedipus Tyrannus of Sophocles, Translated and Explained*, and of A. Rostagni, *Giuliano l'Apostata*, by P. Shorey.

From *The Classical Journal*, xv-xvi, we name "The Attitude of Ancient Rome Toward Religion and Religious Cults," E. T. Merrill; "The Primitive Roman Household," N. W. DeWitt; "How and Why: 'Just So' Mythology in Ovid's *Metamorphoses*," E. S. McCartney; "Literary Adaptations and References in Petronius," R. B. Steele; "The Reasons Which have Convinced Me of Homeric Unity," J. A. Scott; "The Non-Virgilian Aeneas," E. T. Sage (a study of ancient impressions of Aeneas in writers other than Vergil, and of some reactions of Vergil's hero upon later readers); "Is the *Octavia* a Play of Seneca?" A. S. Pease; "The Past Decade of Pompeian Studies," A. W. Van Buren; "Some Features of Ovid's Style: II. The Dramatic Element in the *Metamorphoses*," F. J. Miller; "Quintilian, the Schoolmaster," G. J. Laing; "The Place of Sulpicius Severus in Miracle-Literature," K. P. Harrington; "The Human Element," H. M. Kingery (deals largely with Cicero); "Some Phases of Negation in Latin," R. B. Steele; "Notes on the 'Cum'-Construction," H. C. Nutting; "Cicero as a Hellenist," H. S. Scribner; "Archaeological Research in Greece in Relation to Classical Philology, 1869-1919," H. N. Fowler; "Roman Women and the Vote," H. W. Flannery.

Reviews in these volumes to be named are those of C. H. Herford, *The Poetry of Lucretius*, by G. D. Hadzsits; of W. W. Fowler, *Roman Essays and Interpretations*, by A. W. Van Buren; of Innocenze Dall' Osse, *Guida Illustrata del Museo Nazionale di Ancona*, and of R. Paribeni, *Le Terme di Diocleziano e il Museo Nazionale Romano*, by E. Douglas Van Buren (Mrs. A. W. Van Buren).

In *The Classical Weekly*, xiii-xiv, appeared the following articles: "Analysis of Horace, *Sermones* 2.3," C. Knapp; "The Accusative of Specification in Latin," W. H. Kirk; "Tasso's Debt to Vergil," W. P. Mustard; "Modern Antiquities," Ethel H. Brewster (a study of the extent to which things often regarded as distinctly modern were anticipated in ancient days); "Caesar, Cicero, and Pompey," G. Lodge; "A Classification of the Similes in Homer," Eliza G. Wilkins; "A Roman 'Hall of Fame,'" S. A. Hurlbut (a suggestive study of Horace, *Carmina* 4.8, and Aeneid 6.752-860, which brings both passages into connection with the great series of statues of Roman heroes which, according to Suetonius, Augustus erected in his splendid Forum); "Hastings's Encyclopaedia of Religion and Ethics," Grace H. Goodale (a list, with comments, of the articles in this work, volumes i-ix, of interest to the student of the classics); "The Senatus Consultum Ultimum," E. T. Sage (a new study of the famous decree of Oct. 21, 63 B. C., by which the Senate put absolute power into the hands of the consuls; the author in particular seeks to explain why Cicero hesitated to avail himself of this authority against Catiline); "Studies in the Catilinarian Orations," C. Knapp (an examination of the light thrown by these orations on Roman private life); "On an Alleged Inconsistency in the Aeneid (Between 2.781 and Book 3)," E. Adelaide Hahn; "Marginalia from Vergil," E. S. McCartney; "Arma Virumque Cano," P. H. Edwards (a study of a certain use of the accusative, in Latin poetry and in English poetry); "The Lonely Word in Vergil," A. L. Keith (a study of passages which perhaps illustrate Tennyson's line about Vergil, "All the charm of all the Muses often flowering in a lonely word"); "Anthropology and the Classics," H. L. Ebeling; "The Love of Nature in Vergil. I," C. Knapp; "The Italic Languages," E. H. Sturtevant (an excellent account of the various forms of the Italic languages current in ancient Italy).

Important reviews in these two volumes are the following: of Mary Emma Armstrong, *The Significance of Certain Colors in Roman Ritual*, by G. D. Hadzsits; of M. Platnauer, *The Life and Reign of the Emperor Lucius Septimius Severus*, by A. E. R. Boak; of W. T. Rowland, *On the Position in the Clause of Ne and Ut in Certain Documents of Colloquial Latin*, by A. L. Wheeler; of C. H. Herford, *The Poetry of Lucretius*, by R. B. English; of *Recent Translations of the Classics (Especially in the Loeb Classical Library)*, by C. Knapp; of W. E. Leonard, *T. Lucretius Carus, Of the Nature of Things: A Metrical Translation*, by R. B. English; of A. F. Geyser, *Musa Americana: Second Series; Home Songs in Latin Set to Popular Melodies* by G. D. Kellogg; of J. E. Sandys, *Latin Epigraphy: An Introduction to the Study of Latin Inscriptions*, by C. Knapp; of G. Ferrero and C. Barbagallo, *A Short History of Rome*, by G. A. Harter; of Elizabeth Nitchie, *Vergil and the English Poets*, by M. B. Ogle; of A. F. Geyser, *Musa Americana: Third*

Series; Latin Odes in Classic Meters, by G. D. Kellogg.

The *Transactions of the American Philological Association*. (vol. 1) had a special interest, because it was connected with the celebration, one year late, on account of the Great War, of the fiftieth anniversary of the Association, at the University of Pittsburgh, in December, 1919. Four papers in the volume bore directly on the celebration: "A History of the American Philological Association," F. G. Moore; "Fifty Years of Classical Studies in America," P. Shorey; "Fifty Years of Comparative Philology in America," M. Bloomfield; "The Philological Association of the Pacific Coast," J. Elmore (this Association is affiliated with the American Philological Association). Five other papers deal with the fourth century A.D.: "The Latin Language in the Fourth Century," R. G. Kent; "The Church in the Fourth Century," E. T. Merrill; "The Pagan Reaction in the Late Fourth Century," C. H. Moore; "Claudian," J. C. Rolfe; "The Attitude of Jerome Towards Pagan Literature," A. S. Pease. Other papers are: "The Publication of Martial's Poems," E. T. Sage; "Oral and Written Pleading in Athenian Courts," G. M. Calhoun. Each volume of the *Transactions* contains a bibliographical record of the work done by members of the Association, as complete as the data furnished by the members will allow; the record in the volume before us covers 10 pages.

As in the *YEAR BOOK for 1917-1919*, attention is called to the fact that in the *Bulletins* or *Studies* published under the auspices of various Universities papers appear that fall in the field of classical philology. It is difficult to keep abreast of such work, since the *Bulletins* and *Studies* are published irregularly; some aid may be got here from the department of *The Classical Weekly* which is known as "Classical Articles in Non-Classical Periodicals."

In *Studies in Philology*, xvii (University of North Carolina) appeared "A Thirteenth-Century Fragment of Justinian's Digest," G. H. Harrer and J. S. Moffatt, Jr.; "The Present Status of the Satura Question," B. L. Ullman; "Marginalia," J. C. Rolfe (notes on Juvenal, Horace, Suetonius, etc.; especially interesting is a group of notes on Latin nautical terms); "An Applied Literature," G. Howe (the author remarks that the Romans held prose—history, biography, letters, jurisprudence, manuals—in greater esteem than verse. The outstanding characteristics of Latin literature are its practical nature and its devotion to the service of the State; in this sense Latin is an applied literature); "Spenser and Lucretius," E. Greenlaw (the author holds that Spenser knew the *De Rerum Natura* of Lucretius not merely as a body of great poetry, "but as a source of philosophy which he annexed as a province of his mind").

In the *University of California Publications in Classical Philology*, v, vii, several papers appeared: "The Greek Theater of the Fifth Century Before Christ," J. T. Allen; "Notes on the *Silvae* of Statius, Book IV," W. A. Merrill; "Solon, The Athenian," I. M. Linforth. The last named monograph falls into two parts: a biography of Solon, and an edition of the fragments of his poems. Nine Appendices deal with various special points in Solon's life. For a review of this book, by W. S. Ferguson, see *The Classical Weekly*, xiv.

Two volumes, xxx-xxxi, of *Harvard Studies in*

Classical Philology, claim attention. From the former we mention: "Collations of the Manuscripts of Aristophanes' *Vespae*," J. W. White and E. Cary; "Imperial Coronation Ceremonies of the Fifth and Sixth Centuries," A. E. R. Boak; "The Rhetorical Structure of the *Encomia* of Claudius Claudian," L. B. Struthers; "The Decree-Seller in the *Birds*, and the Professional Politicians at Athens," C. N. Jackson; "Young Vergil's Poetry," E. K. Rand (Professor Rand adds his weighty support to those who hold that most, if not all, of the pieces in the Appendix Vergiliana were written by Vergil. See above, in the account of *Classical Philology*, xv, the notice of the paper by T. Frank, "Vergil's Apprenticeship. I, II"). In the other volume are four papers: "The Religious Background of the Prometheus Vinculus," J. A. K. Thomson (an English scholar, who lectured at Harvard University in 1919-1920); "Τατερονπρότερον Ὀμηρικόν," S. E. Bassett (an investigation suggested by Cicero's use, in his letter *Ad Atticum* 1.16.1, of the Greek phrase which forms the title of the paper: the author believes that Cicero had in mind a kind of hysteron proteron in Homer by which a person questioned answers the questions in reverse order); "The Spirit of Comedy in Plato," W. C. Greene; "Ithaca: A Study of the Homeric Evidence," F. Brewster. Mr. Brewster thinks it not unlikely that poems which gave stories of trading or viking cruises were known to Homer, and were used by him. Such stories may well have described, correctly, sea-routes used by the early Greeks, and harbors of the west coast of Greece; from them Homer may have drawn his description, in Iliad, Book ix, of Ithaca. All the evidence, Mr. Brewster holds, points to the historic Ithaca as the home of Odysseus.

At the University of Pennsylvania, in each academic year, a free public lecture is given each week by a member of the faculty. These lectures are then gathered into a volume. The six volumes thus far published contain classical papers as follows: "Vergil and the Bay of Naples," "Martial, His Fools and Rogues," W. B. McDaniel; "Some Public and Private Sources of Income in Ancient Rome," "A Friend of Caesar's" (a study of Sallust), J. C. Rolfe; "The Spell of Aristotle," W. R. Newbold; "In the Land of Pelops," "The Quest of Health in Ancient Greece," "Aristophanes and the Great War," H. L. Crosby; "The Origin of the Greek Alphabet," W. N. Bates; "The Roman Emperor Worship," G. D. Hadzsits; "Propertius," H. B. Van Deventer; "Atoms, Old and New," H. C. Richards; "The Great National Rising of the Native Egyptians Against the Ptolemaic Dynasty," W. Max Muller; "The Struggle for Democracy in Ancient Times," A. J. Carnoy (a Belgian scholar, who lectured for a year or two at the University of Pennsylvania).

Smith College Classical Studies, No. 1, is a monograph entitled "Hellenistic Influence on the Aeneid," by Eleanor S. Duckett. The author holds that, in writing the Aeneid, Vergil had so many sources of inspiration and so many powers of poetic expression at his command, and had so marvelously welded them together that nothing Hellenistic jars upon us as we read the Aeneid, or can be separated from the whole.

In *Smith College Studies in History*, iv, appeared "A Study of the Life of the Emperor

Hadrian Prior to his Accession," by W. D. Gray.

In the *Transactions of the Connecticut Academy of Arts and Sciences*, xxiii, H. M. Hubbell published an extensive monograph, "Rhetorica of Philodemus," with translation and commentary.

Three volumes of the *Memoirs of the American Academy in Rome* have been published. It will be recalled that into the Academy the American School of Classical Studies at Rome was merged some years ago. In vol. i we find "The Reorganization of the Roman Priesthood at the Beginning of the Republic," J. B. Carter; "The Vatican Livy and the Script of Tours," E. K. Rand and G. Howe (in opposition to the views of F. W. Shipley, the authors hold that the Codex Reginensis of Livy represents only an early stage of the script of Tours); "Ancient Granulated Jewellery of the Seventh Century B.C. and Earlier," C. D. Curtis; "Capita Desecta and Marble Coiffures," J. R. Crawford (the author seeks to refute an explanation of certain segmented heads seen in many Museums; he holds that the coiffures are entirely distinct from the heads, and should not be included with them, as is commonly done. He suggests, too, that Greek and Roman sculptors were more ready than is usually admitted to employ more than one block in the making of a marble head). Vol. ii contains, besides other things, "The Gallic Fire and Roman Archives," Lucy G. Roberts (the author holds that certain temples at Rome survived the fire of B.C. 387, and that the Gauls showed more regard for temples and archives than has been generally supposed. If so, it may be necessary to revise current views of Roman history and Roman literature); "Studies in the Archaeology of the Forum at Pompeii," A. W. Van Buren (a very important paper, correcting and expanding our knowledge); "Terracotta Arulae," E. Douglas Van Buren (Mrs. A. W. Van Buren: the paper treats certain small terracotta altars which influenced sculpture in relief, especially that of Roman sarcophagi). Volume iii contains "The Bernardini Tomb," C. D. Curtis (a study of a remarkable series of objects, in gold, silver, bronze, ivory, iron, amber, glass, wood, found in 1876, in a tomb excavated at Palestrina, the ancient Praeneste. Some of the objects are clearly of Eastern origin, others are of local workmanship. The entire collection is to be seen now in Rome, in the Museo Preistorico); "Praxias," E. Douglas Van Buren (a study of an Athenian sculptor, one of the artists to whom was entrusted the important task of adorning the Temple at Delphi when it was rebuilt after its destruction in the early part of the fourth century B.C.).

Some books by American classical scholars may now be mentioned. First we name *Lucilius and Horace*, by G. C. Fiske, of the University of Wisconsin. This large and scholarly volume deals with such topics as: "The Classical Theory of Imitation; The Relation of Lucilius and the Scipionic Circle to the New Greek Learning and Literature, Lucilius and the Greek Satirists, The Satires of Book I <of Horace>, The Satires of Book II <of Horace>, The Epistles and Ars Poetica <of Horace>." Other books are the following: *An Economic History of Rome*, T. Frank (for an indication of its contents see a notice, by A. E. R. Boak, in *The Classical Weekly*, xiv); *Martial the Epigrammatist*, K. F. Smith (in this are collected, with other things,

several admirable papers published in various periodicals by the late Professor Smith, "Martial the Epigrammatist," "The Poet Ovid," "Propertius: A Modern Lover in the Augustan Age"); "Methods and Materials of Literary Criticism: Lyric, Epic, and Allied Forms of Poetry," C. M. Gayley and B. P. Kurtz (a comparative study, of much interest and importance for the student of the classics); *A Classical Technology, Edited from Codex Lucensis, 490*, J. M. Burnam (a work of value to students of ancient and early medieval technology, Low Latin, and Romance philology); *The Pronunciation of Greek and Latin*, E. H. Sturtevant (a thoroughly scholarly work); *Grammar of the Greek New Testament in the Light of Historical Research*, third edition, A. T. Robertson (far the best work on the subject); *A Grammar of New Testament Greek, Volume 2, Part I*, J. H. Moulton; *Aristotelis Meteorologicorum Libri Quattuor*, F. H. Foies (a critical edition; for a notice of it, by C. Knapp, see *The Classical Weekly*, xiii, 64).

In the YEAR BOOK for 1919 mention was made of *Musa Americana. First Series*, a collection of 12 translations into Latin, by A. F. Geyser, S. J. Father Geyser has since published *Musa Americana, Second Series: Home Songs in Latin Set to Popular Melodies, Musa Americana, Third Series: Latin Odes in Classic Metres, With English Text, and a Latin version of Goldsmith, Deserted Village*. For a discriminating and sympathetic review of the Second and Third Series, by G. D. Kellogg, see *The Classical Weekly*, xiii, xiv.

The work of younger American scholars is seen in the dissertations presented by them to various Universities in part fulfilment of the requirements for the degree of doctor of philosophy. In 1912-1916 there was published, annually, by the Library of Congress, a volume entitled, *A List of American Doctoral Dissertations Printed in . . .* The volume for 1917 is soon to appear. Dissertations on classical subjects were, of course, included. A partial list of such dissertations, published most of them, in 1919-1920, follows (the name of the University to which the dissertation was presented is given in parenthesis immediately after the name of the dissertation itself): *Macrinus and Diadumenianus* (Michigan), H. J. Bassett; *On Transition in Plato* (Chicago), Grace H. Billings; *The Platonism of Philo Judaeus*, Thomas H. Billings; *The Dramatic Values in Plautus* (Pennsylvania), W. W. Blancke; *Titus Pomponius Atticus: Chapters of a Biography* (Bryn Mawr), Alice H. Byrne; *Janus in Roman Life and Cult* (Pennsylvania), Bessie R. Burchett; *Transition in the Attic Orators* (Chicago), R. D. Elliott; *The Sequence of Tenses in Plautus* (Pennsylvania), E. H. Heffner; *An Epigraphic Commentary on Suetonius's Life of Tiberius* (Pennsylvania), Clara A. Holtzhauser; *Phases of Corruption in Roman Administration in the Last Century of the Roman Republic* (Chicago), R. O. Jolliffe; *Sycophancy in Athens* (Chicago), J. O. Lofberg; *A Study of Women in Attic Inscriptions* (Columbia), Helen McClees; *A History of the Title Imperator Under the Roman Empire* (Chicago), D. McFayden; *The Dream in Homer and Greek Tragedy* (Columbia), W. S. Messer; *The Metamorphoses Ascribed to Lucius of Patrae: Its Content, Nature, and Authorship* (Princeton), B. E. Perry; *C. Suetonii Tranquilli De Vita Caesarum Liber*

VIII: *Divus Titus: An Edition with Parallel Passages and Notes* (Pennsylvania), Helen Price; *On the Position in the Clause of Ne and Ut in Certain Documents of Colloquial Latin* (Columbia), W. T. Rowland; *Deception in Plautus: A Study in the Technique of Roman Comedy*, Helen E. Wieand; *Wagner's Dramas and Greek Tragedy* (Columbia), Pearl Wilson.

During the year American classical scholarship suffered grievously in the deaths of Edwin Whitfield Fay, Thomas Dwight Goodell, and Bernadotte Perrin (see *NECROLOGY*).

We turn now to the work of English classical scholars. - For light on such work see the volume entitled, *The Year's Work in Classical Studies*, published annually by the Classical Association of England and Wales, and the department of *The Classical Weekly*, which is known as "Classical Articles in Non-Classical Periodicals." English periodicals, too, and newspapers give far more attention, especially in reviews, to such work than similar publications in America give.

The two most accessible repositories of classical work in England are, *The Classical Quarterly* and *The Classical Review* (in each a few contributions from American scholars appear each year). From *The Classical Quarterly*, xiv, we name "The MSS. of Callimachus' Hymns," M. T. Smiley; "The Culex," W. R. Hardie (the author refused to believe that the *Culex* was written by Vergil; for the opposite view, see above, in the accounts of *Classical Philology* and *Harvard Studies*, the notices of papers by T. Frank and E. K. Rand); "Aristotelica," J. A. Smith; "Miscellanea Hesiodica," H. G. E. White; "Vindiciae Platonicae II," J. Burnet; *Vergil's Res Romanae*, T. Frank; "Plato Comicus: Frag. Phaon II: A Parody of Attic Ritual," L. R. Farnell; "The Unique Manuscript of Apuleius' *Metamorphoses* (Laurentian. 68.2) and its Oldest Transcript (Laurentian. 29.2)," E. A. Lowe; "Scipionic Forgeries," E. W. Fay (an argument that the epitaphs of the two oldest Scipios are not as old as scholars have thought; their language is not archaic, but archaistic); "The *Pervigilium Veneris* and the Tiberiani Amnis in Quatrains," J. A. Fort; "Augustus and his Legionaries," E. G. Hardy. In each number of this periodical are given valuable summaries of the contents of classical periodicals—American, German, French, English, Italian. *American Journal of Philology*, *Athenaeum* (published at Pavia, Italy), *Berliner Philologische Wochenschrift*, *Classical Philology*, *The Classical Weekly*, *Deutsche Literaturzeitung*, *Göttingische Gelehrte Anzeigen*, *Glotta*, *Hermes*, *Journal of Philology* (published in England), *Mémoires de la Société de Linguistique de Paris*, *Mnemosyne* (published in Holland), *Musée Belge*, *Revue de Philologie*, *Rheinisches Museum*, *Rivista di Filologia e di Istruzione Classica*, *Wochenschrift für Klassische Philologie*, *Zeitschrift für Vergleichende Sprachforschung*.

From *The Classical Review*, xxiv, we cite the following: "The Ignorance of Antiochus: A Study in Interpolation," L. H. Allen (an examination of parts of *Iliad*, xvii); "The *Deus Ex Machina* in Euripides," R. B. Appleton; "Fronto," C. R. Haines; "The Art of Virgil's Poetry," C. E. S. Headlam; "Terentiana," J. S. Phillimore; "Notes on Thucydides, Book VI," A. W. Gomme; "Some Passages from the *Metamorphoses* of Ovid," D. A. Slater; "The Hyporcheme of Pratinas," H. W. Garrod; "Orientation of the Dead in Greece and Italy," H. J. Rose;

"When did Agricola Become Governor of Britain," J. G. C. Anderson; "Communis Sensus," H. J. Thomson.

Of reviews in this volume we mention the following: of A. W. DeGroot, *A Handbook of Antique Prose-Rhythm*, by A. C. Clark; of R. J. Walker, *The Ichneutae of Sophocles, Edited with Introductory Chapter, Notes, and a Translation into English*, by A. S. Hunt and E. A. Sonnenschein; of Sir Robert Allison, *Lucretius on the Nature of Things Translated into English Verse*, by C. Bailey; of J. P. Postgate, *Phaedri Fabulae Aesopicae*, by A. E. Housman, of J. T. Allen, *The Greek Theater in the Fifth Century Before Christ*, and of R. C. Flickinger, *The Greek Theater and its Drama*, by G. C. Richards; of F. Holland, *Seneca*, by J. W. Duff.

Lastly, we set down here the titles of various books by foreign scholars which seem to be of importance (see the opening paragraph of this article): N. Ault, *Life in Ancient Britain* (a survey of the social and economic development of the people of England from earliest times to the Roman conquest); C. Autran: *Phéniciens: Essai de Contribution à l'Histoire Antique de la Méditerranée*; E. R. Banerjee, *Hellenism in Ancient India*; E. Bignone, *Epicuro* (a collection of the fragments of Epicurus, and of the ancient passages which bear on his life, with translation and commentary); H. E. Butler, *Sixth Book of the Aeneid, With Introduction and Notes*; J. Carcopino, *Virgile et les Origines d'Ostie*; J. Carcopino, *La Loi de Hiéron et les Romains*; E. Ciccotti, *Griechische Geschichte*, and L. M. Hartmann and J. Kromayer, *Römische Geschichte*, parts of a work entitled, *Weltgeschichte*; E. C. Clarke, *History of Roman Private Law, Part III: Regal Period*; Marjorie M. Crump, *The Growth of the Aeneid*; J. F. Dobson, *Greek Orators*; W. Warde Fowler, *Roman Essays and Interpretations* (a valuable collection of the author's scattered essays; the papers deal with matters of Roman religion, with Horace and Vergil; there are, also, sketches of the life and work of two modern classical scholars, Berthold Georg Niebuhr and Theodor Mommsen); R. Grosse, *Römische Militärgeschichte von Gallienus bis zum Beginn der Byzantinischen Themenverfassung*; B. Haarhoff, *Schools of Gaul: A Study of Pagan and Christian Education in the Last Century of the Western Empire*; O. Hamelin, *Le Système de Aristote*; W. R. Hardie, *Res Metrica: An Introduction to the Study of Greek and Roman Versification* (a book bound to attract a good deal of attention); Sir Thomas Heath, *Euclid in Greek: Book I, Edited with Introduction and Notes*; F. Holland, *Seneca*; E. Meyer, *Cassara Monarchie und das Prinzipat des Pompejus: Innere Geschichte Roms von 66 bis 44 v. Chr.*; G. Norwood, *Greek Tragedy*; C. Robert, *Die Griechische Heldensage: Erstes Buch*; J. Sargeant, *The Trees, Shrubs, and Plants of Virgil*; J. T. Sheppard, *The Oedipus Tyrannus of Sophocles* (the author maintains that, for the right interpretation of a Greek play, we need not only technical and linguistic learning, but also, and in even larger measure, a conscious apprehension of the ethical and religious presuppositions which the poet and his audience took for granted. With such apprehension we shall see that Sophocles could no more regard Oedipus as guilty than we do); W. T. Stace, *A Critical History of Greek Philosophy*; E. Stampini, *Nel Mondo Latino: Studi di Letteratura e Filologia*; W. C.

Summers, *The Silver Age of Latin Literature from Tiberius to Hadrian*; E. J. Urwick, *The Message of Plato*.

One observation may be made on this review of work in the field of classical philology in 1920; its most striking feature, perhaps, is the great amount of attention devoted to Vergil.

In conclusion, the difficulty of keeping track of work that is of consequence within the field of classical philology may be emphasized by the statement that, often, books and papers not issued by professed classical scholars offer much of prime importance to the professional classical student. Such a book, for example, is that of Elizabeth Nitchie, *Vergil and the English Poets* (noted in the YEAR BOOK for 1919. For a review of it, by M. B. Ogle, see the account, above, of the reviews in *The Classical Weekly*). Note, too, the book by C. M. Gayley and B. P. Kurtz, *Methods and Materials of Literary Criticism*, listed above. Another book which is destined to have a wide vogue among lovers of the classics is, *The Traditions of European Literature from Homer to Dante*, by Barrett Wendell, Emeritus Professor of English Literature in Harvard University. Of the 638 pages of letter-press, 158 deal with the "Traditions of Greece," 187 with the "Traditions of Rome."

PHILOLOGY, MODERN. A severe loss to the study of Romance philology in the United States was sustained in the death of Dr. L. Herbert Alexander of Columbia University. The influence of this well-trained scholar will long be felt especially through his constant efforts to systematize the classification of MSS. in Old French so as to promote their reproduction and classification. Such painstaking and unremunerative work, which is too often unappreciated, was characteristic of his self-abnegation.

Inspired no doubt by the example set by the NEW INTERNATIONAL YEAR BOOK for more than 10 years, a number of British scholars have dedicated themselves to the annual task of preparing a *Year-Book of Modern Languages*, the first number of which has just appeared (December). This publication is naturally far more pretentious than the brief article contained in these pages. For those who desire more extensive data than the limits of this study allow we recommend its purchase. The opening chapter is concerned with a critical discussion of the Report of the Government Committee to which attention was called in our report last year. (p. 522). "This document," says Professor Waterhouse of the University of Dublin, "may be justly termed the Magna Charta of Modern Languages. It sets forth plainly the history of modern studies in Great Britain, reveals their present position in our educational system and points out the road before us." Then follows a chapter on the "Civil Service and Modern Languages," by Prof. E. Bullough, of Cambridge. In a brief but very interesting chapter on the "Progress of Phonetics since 1914," Miss L. E. Armstrong, of University College, London, reveals the great interest manifested for this study in the British Isles where perhaps it has developed both practically and theoretically to a greater extent than in any other country. We share the hope of the author that "the science of Phonetics will in the future play its part in the great work of promoting international understanding, fellowship and unity." The chapter on "French" has been divided as follows:

"Anglo-Norman Languages and Literature," by Prof. Paul Studer of Oxford; a very useful select bibliography of the "Middle Ages and Fifteenth Century," by Miss K. T. Butler of Cambridge; and the literature and texts of the "Seventeenth and Eighteenth Centuries," by Miss D. W. Black. The article on the "Nineteenth Century" will appear in the next volume. "Provençal Literature" is treated by Rev. H. J. Chaytor of Cambridge. In German, the article on the "German Language," was prepared by Prof. R. A. Williams of Queen's University, Belfast; "Old and Middle High German Literature," by Dr. L. A. Willoughby of Sheffield; and on "Modern German Literature during the War," by Prof. F. E. Sandbach of Birmingham. In Italian, "Dante and Early Italian Literature," was written by Prof. E. G. Gardner of Manchester; "Literature of the Fourteenth to Eighteenth Centuries," by Mr. G. Foligno of Oxford; "Nineteenth Century Literature," by Prof. T. Okey of Cambridge; "Italian Philosophy of the Nineteenth Century," by A. Crespi; and "Recent General Literature," Prof. E. Bullough. For Spanish the arrangement is somewhat unusual and less desirable. Thus the three articles are entitled: "Cervantes," by Prof. J. Fitzmaurice-Kelly of London; "Literature of the Sixteenth Century," containing some recent revolutionary attacks on old-established theories, by H. Thomas of the British Museum; "Spanish America," by F. A. Kirkpatrick of Cambridge; and "Ruben Darfo," by Fitzmaurice-Kelly. "Russian Literature" is the subject of the article by A. P. Goudy of Cambridge; and "Celtic" is fairly satisfactorily dealt with by the late E. C. Quiggin of Cambridge and E. J. Gwynn of Trinity College, Dublin. We extend our best wishes to the new publication which should prove of incalculable value to teachers and scholars.

As our aim herein is to present the fundamental principles of philology and to indicate, if possible, in what direction this science may tend to develop, we have not hesitated during the past few years to emphasize the fact that the methods heretofore adopted in this extensive domain of research, whose vital importance to humankind the great war has only served to make more obvious, were on the eve of undergoing changes that might prove revolutionary. For that reason in the YEAR BOOK of 1914 we called attention to the theories of the brilliant Meillet who is the leader of the French school. The war which turned men's thoughts from philological research to matters of more immediate concern retarded considerably the impetus thus given to the new movement. In 1919 Mr. J. Gilliéron, one of the editors of the monumental *Atlas linguistique de la France*, published at Neuveville, Switzerland, a series of lectures on *La Faillite de l'étymologie phonétique* which, as the title indicates, is a confession of the inadequacy of the methods in vogue, notwithstanding the yeoman service they may have rendered in the past, to cope with the present-day problems. The mere fact that such a question is posed frankly and fearlessly by scholars shows that they are alive to the new demands made upon them, and that having exhausted the traditional methodology they are eager to enter upon a yet more active career of progress. The future of our study is therefore, glowing with possibilities.

GENERAL. Among the works of general interest it behooves us to note, in the first place,

John Oakesmith's *Race and Nationality* (London, 1919), an inquiry into the origin and growth of patriotism. The Rev. P. T. Mainage has begun the publication of a comprehensive work entitled *Les Religions de la Préhistoire* (Paris),* the first volume of which treats of the palaeolithic age. Other works deserving mention are G. Wallis, *Philosophy of Speech* (New York); the 2d edition of A. Bartels, *Rasse und Volkstum* (Weimar), a collection of essays; H. Schuchardt, *Sprachursprung* (pt. II, Berlin); and L. Wiener, *Contributions toward a History of Arabico-Gothic Culture* (Vol. II, New York, 1919), of which the conclusions are not always safe. Last year we called attention to the renewed interest in the great philological problem of Europe, i.e. the Basque language. In that respect the following works are noteworthy: J. de Urquijo e Ibarra, *Estado actual de los estudios relativos a la lengua vasca* (Bilbao, 1918); H. Urtel, *Zur baskischen Onomatopoesis* (Berlin, 1919); and A. Martinez Pajares, *El vasconco y el bereber* (Madrid, 1919), which consists of a critical study of the philological affinities between these two languages. If such a relationship can be proved, the problem of the origin of one of the primitive races of Europe, i.e. the ancient Iberians, may be within the possibility of solution. Useful studies on the latter of these languages, the Berber of Africa, are contained in the following: E. Laoust, *Mots et choses berbères* (Paris, 1919), with special reference to the dialects of Morocco; *Etude sur le dialecte berbère des Ntifa*, by the same author (Paris), consisting of grammar and texts; H. Basset, *Essai sur la littérature des Berbères* (Paris); E. Destaing, *Etude sur le dialecte berbère des Aït-Seghruchen* (Paris); and H. Schuchardt, *Die romanischen Lehnwörter im Berberischen* (Vienna, 1918). In Indo-European the most important contributions consist of new editions of the following standard works: O. Schrader, *Reallexikon der indogermanischen Altertumskunde* (2d ed., by A. Nehring, 2d Lieferung, Berlin); S. Feist, *Indogermanen und Germanen* (2d ed., Halle, 1919); B. Delbrück, *Einleitung in das Studium der indogermanischen Sprachen* (6th ed., Leipzig, 1919); and H. Paul, *Prinzipien der Sprachgeschichte* (5th ed., Halle). To these may be added Ch. Bartholomae, *Zur Etymologie und Wortbildung der indogermanischen Sprachen* (Heidelberg, 1919). A rare event is a work on Albanian, that puzzling descendant of ancient Illyrian, which stands alone in the Indo-European family (for Albanian, see NEW INTERNATIONAL ENCYCLOPÆDIA, 2d ed., Vol I, p. 324). This happens to be a modest text by L. Dufour, *La Langue albanaise en 30 leçons* (Paris).

INDO-IRANIAN. Since the beginning of the great war this field has not received the attention that it deserves. Among the rare works which appeared last year—and, be it added, none of which is of great importance—are the following editions and translations: *Bhagavad-Gîtâ*, *Chant du Seigneur*, translated into French by Drs. A. Auvard and M. Schultz, with preface, notes, and vocabulary (Paris); *Les Upanishads*, selected parts translated by P. Salé (Ib.); *Sakuntala*, translated by A. Mortier (Ib.); and the same, a new version written for the English stage, by L. Binyon (London).

ARMENIAN. The language of this people, whose

woes and sufferings we are too quickly inclined to forget, was commented on by J. L. Gerig in *New Armenia* (vol. xii, pp. 86-87, June, New York); and its history has been well presented by J. Laurent, *L'Arménie entre Byzance et l'Islam, depuis la conquête arabe jusqu'en 886* (Paris, 1919).

CELTIC. The important *Dictionnaire archéologique de la Gaule* has been continued after the letter L by E. Cartailhac (Vol. ii, fascicules 3 and 4, Paris, 1919). Prof. G. Dottin has produced another most useful text in *La Langue Gauloise*, which includes the grammar of the language, texts, and glossary (Paris). A. B. Scott's *The Pictish Nation, its people and its church* (London, 1919), revives a mooted problem that had been lying dormant for several years. J. D. N. White has made a noteworthy addition to the extensive literature regarding the patron Saint of Ireland in his *St. Patrick: His Writings and Life* (London). A posthumous work of Kuno Meyer is appearing under the title *Bruchstücke der älteren Lyrik Irlands* (1st part, Berlin, 1919). P. van Tieghem adds to his two-volume researches on Ossianism, so important for the history of literature in most European countries in the nineteenth century, a study entitled *Ossian et l'Ossianisme dans la littérature européenne au 18e siècle* (Groningen). For Scottish Gaelic we note L. Macbean, *Buchanan, the Sacred Bard of the Scottish Highlands: His Confessions and His Spiritual Songs* (London), consisting mainly of translations. The two most important contributions to Welsh philology are J. Loth, *Remarques et Additions à la Grammaire galloise historique et comparée de John Morris Jones* (Paris), a detailed list of errors and lacunae overlooked by the author which fills 135 pages and adds greatly to the value of his work; and M. L. Williams *The Making of Modern Wales* (London, 1919), containing studies in the Tudor settlement of Wales and a chapter (vii) on the Welsh language.

SLAVIC. The mysterious Slavic culture, so difficult for us to understand, is well sketched by A. Jensen in his *Slavisk Kultur och litteratur under nittonde århundradet* (Stockholm). The indefatigable V. Jagic, whose numerous works were the subject of frequent comment in these columns until the outbreak of the war, returns to his *premières amours* in a grammatical and critical study entitled *Zum altkirchenslawischen Apostolus* (Vienna). To Balto-Slavic we have the contributions of S. Agrell, *Balto-slavische Lautstudien* (Lund, 1919), and H. Petersson, *Baltische und slavische Wortstudien* (Lund, 1918). Other contributions to different fields of Slavic philology are A. Leskien, *Litauisches Lesebuch mit Grammatik und Wörterbuch* (Heidelberg); E. Prokosch, *Elementary Russian Grammar* (Chicago); G. Androvic, *Grammatica della Lingua jugoslava (serbo-croata)* (2d ed., Milan); and B. Guyon, *Grammatica teorico-pratica della lingua serba* (Ib.).

ENGLISH. Of a general nature are P. G. Thomas, *Introduction to the History of the English Language* (London); and H. C. Wyld, *Kurze Geschichte des Englischen* (German transl. by H. Mutschmann, Heidelberg). To the long bibliography of Anglo-Saxon may be added A. J. Wyatt, *Anglo-Saxon Reader* (Cambridge); R. W. Chambers, *Introduction to the Study of Beowulf* (Ib.), a timely work; and E. Björkman, *Studien über die Eigennamen im Beowulf*

* Where no date is given, the reader will understand that the work appeared in 1920.

(Halle). Old English receives attention in M. Redin, *Studies of Uncompounded Personal Names in O. E.* (Uppsala, 1919); and A. Keiser, *Influence of Christianity on the Vocabulary of O. E. Poetry* (Urbana, Ill.). In Middle English the following deserve attention: Jos. Hall, *Selections from Early Middle English, 1130-1250*, (Oxford), containing introduction, text and notes; and the 3d edition of B. Ten Brink's well-known study, *Chaucers Sprache und Verskunst* (ed. by E. Richardt, Leipzig). One of the most important aspects of English philology is dialectology of which the bibliography is growing rapidly, for, as a critic in the *Times* recently remarked, dialect study is essential to a thorough knowledge of English. Among the noteworthy contributions to this study are M. Sharpe, *Middlesex in British, Roman and Saxon Times*, (London); Rev. E. Gepp, *Contribution to an Essex Dialect Dictionary* (Ib.), a most laudable undertaking containing a good account of the phonology of the dialect; K. Brunner, *Die Dialektliteratur von Lancashire* (Vienna); G. Langenfeldt, *Toponymics or Derivations from Local Names in English* (Uppsala); and C. M. Drennan, *Cockney English and Kitchen Dutch* (Witwatersrand). Of a syntactical nature are N. Bgholm, *English Prepositions* (Copenhagen); A. G. Kennedy, *The Modern English Verb-Adverb Combination* (Stanford University, Cal.); and A. Darby, *The Mechanism of the Sentence* (Oxford). Of interest to semantics are R. Bridges, *On English Homophones* (Oxford, 1919); and W. Uhrström, *Pickpocket, Turnkey, Wrap-Rascal and Similar Formations in English* (Stockholm). Works relating to the different aspects of the modern language are: H. O'Grady and N. Catty, *The Early Stages of Spoken and Written English* (London); H. Bradley, the well-known lexicographer, *On the Relations between the Spoken and Written Language* (Oxford, 1919); and H. C. Wyld, *History of Modern Colloquial English* (London). For those interested in the commercial language we recommend J. B. Opdycke, *The English of Commerce* (N. Y.); G. B. Hotchkiss and E. J. Kilduff, *Handbook of Business English* (2d ed., N. Y.); W. E. Bartholomew and F. Hurlbut, *The Business Man's English* (N. Y.). W. Ripman's *First English Book* (N. Y., 1919), is a useful text, especially for foreigners. Before mentioning works of a lexicographical character it is but fitting to note H. Bradley's *Sir James Murray, 1837-1915* (Oxford), a memoir expressing full appreciation of the vast undertakings of a remarkable mind. *The New English Dictionary*, which owes its inception to the above-mentioned scholar, reached as far as Visor-Ywyer (ed. by W. A. Craigie, Oxford). Of a more practical nature are A. Loring, *Rhymer's Lexicon* (2d ed. N. Y.), with an introduction by G. Saintsbury; and A. H. Fay, *Glossary of the Mining and Mineral Industry* (Washington), issued by the United States government.

GERMANIC. Under this general heading we include not only studies on German, but also those of a general nature as well as those dealing with closely related dialects. New editions of standard works on Gothic first demand our attention. Thus, the 9th edition of W. Braune, *Gotische Grammatik mit Lesebüchern und Wortverzeichnis* (Halle); the 6th edition of W. Streitberg, *Gotisches Elementarbuch* (Heidelberg); the 2d edition of the same author's *Die gotische*

Bibel (Ib., 1919), containing the Greek text and translation; the 2d edition (1st lieferung) of S. Feist, *Etymologisches Wörterbuch der gotischen Sprache* (Halle). Among the studies of a general nature are Th. Birt, *Die Germanen* (Munich, 1918), an attempt to explain the meaning and origin of the race-name; G. Baesecke, *Deutsche Philologie* (Gotha, 1919); B. Delbrück's important *Germanische Syntax* (Leipzig, 1919), of which this part deals with the *Konjunktionssätze*; and E. Wasserzieher, *Leben und Weben der Sprache* (2d ed., Berlin). In the historical grammar of German we have H. Hirt, *Geschichte der deutschen Sprache* (Munich, 1919); a comprehensive though brief manual; parts of volumes iii and v of H. Paul's monumental *Deutsche Grammatik* (Halle); E. Wexler, *Studien zum Bedeutungswandel im Deutschen* (Uppsala, 1918); and *Aufsätze zur Sprach und Literaturgeschichte* (Dortmund), a testimonial prepared by pupils and friends in honor of W. Braune. The studies in Old and Middle High German include W. Braune, *Abriß der althochd. Grammatik* (5th ed., Halle, 1919); and E. Wahnschaffe, *Die syntaktische Bedeutung d. mhd. Enjambements* (Berlin, 1919). To these may be added A. Götze, *Frühneuhochdeutsches Lesebuch* (Göttingen). Among the works of a special nature are E. Danielowski, *Das Hiltibrantlied* (Berlin, 1919); J. Schnetz, *Herkunft des Namens Würzburg* (Lohr, 1919); and E. von Wecus, *Die Wochen- und Monatsnamen und die Festtage und ihre Bedeutung* (Zeit). In dialectology we note *Deutsche Dialektgeographie* (Marburg); O. Weisse, *Unsere Mundarten, ihr Werden und Wesen* (2d ed., Leipzig); J. Seemüller, *Deutsche Mundarten* (pt. 5, Vienna); F. Schön, *Geschichte der deutschen Mundartdichtung* (Freiburg), of which part i extends from the end of the sixteenth century to the low German classics; Dr. Rezak, *Deutsch-schweizerisches encyklopädisches Wörterbuch der oberlausitzer Sprache* (Bautzen); G. Buchner, *Bibliographie zur Ortsnamenkunde der Ostalpenländer* (Munich, 1919); E. W. Selmer, *Sprachstudien im Lüneburger Wendland* (Kristiania, 1919); L. Wirth, *Synonyme, Homonyme, Redensarten, etc. der deutschniederländischen Sprache* (2d ed., Groningen, 1919); A. Bass, *Bibliographie der deutschen Sprachinseln in Südtirol und Oberitalien* (3d pt., Leipzig, 1919); and L. Günther, *Die deutsche Gauner Sprache* (Leipzig, 1919). Dr. M. J. Rudwin's *Origin of the German Carnival Comedy* (N. Y.), is a work of great value for students of popular drama. The following parts of the masterly *Deutsches Wörterbuch* of J. and W. Grimm appeared: Vols. IV, pt. 1; VI, pt. 2; XI, pts. 3 and 7; XII, pt. 2; XIII, pt. 16 (Leipzig). Also the 60th livraison of H. Fischer, *Schwäbisches Wörterbuch* (Tübingen); and the 44th edition of W. James, *Dictionary of the English and German Languages* (London).

In Dutch there is but one work deserving mention: C. T. Lion, *Kurzgefasstes Lehrbuch der Niederländischen Sprache* (Leipzig, 1919).

SCANDINAVIAN. In Danish we have A. Olrik, *Heroic Legends of Denmark* (translated by L. M. Hollander, N. Y.), which should be of service to students interested in the sources of Beowulf; and part II of V. Dahlerup, *Ordbog over det danske Sprog* (Copenhagen). The contributions to Norwegian philology consist of A. Torp, *Nynorsk etymologisk ordbok* (Christiania); and G. T. Flom, *Norwegian Surnames* (Urbana, Ill.).

As for Swedish the following may be mentioned: E. Hellquist, *Svensk etymologisk ordbok* (pt. I, Lund); the same author's *De svenska ortnamnen på-by* (Göteborg); and A. Kock, *Svensk Ljudhistoria* (vol. iv, pt. I, Lund).

ROMANCE. Important works of a general nature include, W. Mayer-Lübke, *Romanisches etymologisches Wörterbuch* (Heidelberg), of which parts 11 and 12 appeared; K. von Ettmayer, *Vademecum für studierende der romanischen Philologie* (Heidelberg); Atkins and Hutton, *Teaching of Modern Foreign Languages in School and University* (N. Y.). Among the studies on syntax and comparative lexicography we note: E. G. Wahlgren, *Etude sur des actions analogiques réciproques du parfait et du participe passé dans les langues romanes* (Uppsala); E. Lerch, *Die Verwendung des romanischen Futurums als Ausdruck eines sittlichen Sollens* (Leipzig, 1919); I. Pauli, *Enfant, garçon, fille dans les langues romanes* (Lund, 1919); and L. Battiglioni, *L'Ape e l'Alveare nelle lingue romanze* (Pisa).

FRENCH. Though not relating to Romance languages more than to any other domain of research, it may nevertheless be appropriate to call attention here to a work of inestimable value to scholars—i.e. the 2d series of the well-known *De la méthode dans les sciences* (Paris, 1919), among the authors of which are: Borel, Janson, Meillet, Reinach, etc.—in other words, the leaders in scientific thought in France. As method is of the utmost importance in research, no further stress need be laid on this work. A syllabus of the lectures delivered by G. Janson when visiting professor at Columbia University in 1916-17 has just been issued by the press of that institution under the title, *Esquisse d'une histoire de la tragédie française* (N. Y.). This most useful guide will no doubt be welcomed by all teachers and advanced students of French literature and civilization. In line with the above, attention should also be called to A. Croizet, *Aux étudiants étrangers et la culture française* (Paris, 1919), written in the same beautiful style characteristic of the distinguished Greek scholar. The 34th and 35th fascicules of the *Catalogue des thèses et écrits académiques*, covering the years 1917-18 with a *table de matières* from 1914, are also most welcome. Of a more definitely philological character are: K. Vossler, *Französische Philologie* (Gotha, 1919), consisting of an extensive and practically complete bibliography for the years 1914-1918; F. B. Luquiens, *Introduction to Old French Phonology and Morphology* (2d ed., New Haven, 1919); and the 11th edition of the standard *Grammatik des Altfranzösischen* of Schwan-Beihrens (Leipzig, 1919). In Old French L. Foulet, *Petite Syntaxe de l'ancien français* (Paris), will be found to be useful notwithstanding its rather unique plan. At almost the same time appeared the 12th edition of K. Bartsch's *Chrestomathie de l'ancien français* (ed. by L. Wiese, Leipzig). As important from a literary point of view the following may be mentioned: a new edition of Petit de Julleville, *Histoire de la littérature française* (Paris), of which volume I deals especially with the literature of the Middle Ages; *La Chanson de Roland*, translated by C. K. Scott-Moncrieff (London); H. Hingst, *Enfrances Guillaume* (pt. I, Greifswald, 1919); E. Zubke, *La Comtesse d'Anjou* (pt. II, Ib.), a poem of the year 1316; and M. de Pange,

Les Lorrains et la France au moyen-âge (Paris, 1919). Of a philological or syntactical character are: Eva Seifert, *Zur Entwicklung der Proparoxytona auf -ite, -ita, -itu im Gallo-Romanischen* (Berlin, 1919); E. Oehmman, *Studien über die französischen Worte im Deutschen in 12. und 13. Jahrh* (Helsingfors, 1919); P. Fuchs, *Das altfranz. Verbum errer* (Munich, 1919); E. Graff, *Das participium praesentis im Französischen* (ib.); and R. Ruppert, *Die spanischen Lehn- und Fremdwörter in der französischen Schriftsprache* (Ib.). Among the works containing or devoted to material of regional or dialectal philology, the following may be cited: J. Ruel, *Histoire des Normands, 628-716* (2 vols., Paris, 1919); P. Studer, *The Study of Anglo-Norman* (Oxford); L. Gauchet, and J. Jeanjaquet, *Glossaire des patois de la Suisse romande* (vol. ii), containing an important bibliography; and F. Sarrau, *Petite Grammaire gasconne* (Auch), devoted to the dialect of Armagnac. Syntactical and etymological studies in modern French include, P. B. Fay, *Use of tu and vous in Molière* (Berkeley, Cal.); N. E. Taube, *Etude sur l'emploi de l'argot des malfaiteurs chez les auteurs romantiques* (Uppsala, 1918); D. Adam, *Contribution à l'étude de la langue des Mémoires de Saint-Simon* (Paris); and General Chapel, *Sur l'Origine guerrière des noms de lieux* (Ib.). The very comprehensive and detailed *Dictionnaire historique et biographique de la Suisse* has now reached fascicule v (aquaviva, p. 368). Among modern grammars and treatises on style may be mentioned: C. Bally, *Traité de stylistique française* (Heidelberg); E. F. Bauer, M. Fischer and E. de St. Etienne, *Le Parler de France* (Paris); and H. Bauche, *Le langage populaire* (Ib.) devoted to the everyday language of Paris. Since the armistice the French seem especially interested in our customs and methods of doing business. This is obvious from the large number of technical dictionaries that are constantly appearing. A list of these should prove very useful to us. Among such works may be noted: G. Barrière, *Dictionnaire français-anglais; Termes techniques* (Paris); A. Lainé, *Dictionnaire de l'aviation* (Ib.); J. Bompas and L. Mettée, *Dict. franç.-anglais de la correspondance commerciale* (Ib., 1919); Hermann and Simonier, *Vocabulaire de l'assurance; franç.-allemand, et all.-franç.* (Strasbourg, 1919); L. Anspach et A. Coutanche, *Dict. de droit et de termes juridiques anglais* (Paris), containing a brief exposé of English law; P. Fehner, A. Hermann and Ch. Ganser, *Dict. juridique et administratif allemand-franç. et franç.-all.* (Ib.); H. Viard, *Télégraphie et téléphonie sans fil: Vocabulaire en cinq langues* (Ib.); and the various *Guides techniques Pluon* (Paris), of which there appeared in 1920: I. *Les Transports: Dict. des termes techniques, franç.-anglais et angl.-franç.*; II. *L'Usine: Vocabulaire des termes techniques franç.-angl. et angl.-franç.*, for the use of engineers; and XXVIII. *Le Béton armé: Dict. des termes techniques franç.-angl.-italien*, for those interested in construction with concrete. As an indication of the influence of English on French due to the relations established by the war—a fact anticipated in these pages—we have the interesting work of E. Bonnaffé, *Dict. étymologique et historique des Anglicismes* (Ib.). Other useful dictionaries are *Le Tout Petit Dict. de mots usuels* (Ib.); C. Bourdaud, *Vocabulaire français il-*

lustré (Strasbourg, 1919); E. Maloubier, *French English Practical Phrase-Book* (N. Y.), for tourists; and R. W. Hurst, *366 Eng. Proverbs literally translated into French* (London, 1919).

ITALIAN. The 4th volume of the *Chartularium Studii Bononiensis* (Bologna, 1919) is, like its predecessors, important as a contribution to the history not only of the University of Bologna, but of medieval education in general. For students of the dialects of Italy we note Zérndele, *sturiell e narzisat* (Ib., 1920), a collection of poems in the Bolognese dialect; L. Bottiglioni, *Fonologia del dialetto imolese* (Pisa); T. Spoerri, *Il Dialetto della Valsesia* (Milan, 1919), a dissertation of the University of Berne; A. Giuriato, *Canzoniere vicentino* (Vicenza, 1919); and A. Rovinelli, *Il Gergo nella Società, nella storia, nella letteratura* (Milan, 1919). Among the most useful dictionaries are the 14th edition of James Grassi, *Dict. of the English and Italian Language* (ed. by A. de Beaux, London); M. M. Dander *Dizionario internazionale di aeronavigazione e costruzioni aeronautiche* (Milan, 1919); in Italian, French, English, and German; F. A. Marangoni, *Dizionario commerciale italiano-inglese e ingl.-ital.* (Ib.); A. Marenduzzo, *Vocaboli italiani meno comuni e meno noti* (Livorno, 1919); and E. Zaccaria, *Raccolta di voci affatto sconosciute o mal note ai lessicografi ed ai filologi* (Marradi, 1919).

SPANISH. A most important contribution is that of F. de Onís, *El Español en los Estados Unidos*, an inaugural address read at the University of Salamanca in October, 1920. This distinguished scholar sketches the remarkable growth of the study of Spanish in our institutions and, with unusual comprehension, outlines its future development. Of a more special character are: R. Blanco y Sánchez, *Catálogo de caligrafos y grabadores de letra* (Madrid) with useful bibliographical notes; and J. A. Bolufer, *Tratado de la formación de palabras en la lengua castellana* (Ib.). One would imagine that Spanish alone of all modern languages should be exempt from attempts at spelling reform, and yet we have the following: M. Menéndez Pelayo, *Ortografía racional* (Barcelona, 1919), a posthumous work of the great critic; U. Enríques, *Someros reparos a las diez razones de una nota académica sobre ortografía* (Valparaíso, 1919); and I. Rodríguez, *Tratado de ortofonía española* (Ponce, P. R., 1919). In dialectology are: G. M. Vergara Martín, *Ensayo de un vocabulario de localidades o comarcas de España* (Madrid, 1919); the 14th cuaderno of the *Diccionario gallego-castellano* (Coruña) by the Royal Galician Academy; A. Sevilla, *Vocabulario murciano* (Murcia, 1919); B. Ortín Benedito, *Gramática valenciana* (Valencia, 1919); J. Raz Guzmán, *Voces homófonas* (Mexico, 1919); R. del Castillo, *Estudios lexicográficos nahuatlismos y barbarismos* (Ib.); J. E. Machado, *Cancionero popular venezolano* (Caracas, 1919); and E. Constantino Guerrero, *Diccionario filológico; Estudio general sobre el lenguaje venezolano* (Nietheroy). Students of prosody and grammar will find the following of interest: P. Henriquez Ureña, *La Versificación irregular en la poesía castellana* (Madrid); and a new edition of the *Compendio de la gramática de la lengua castellana* (Ib.) by the Spanish Academy. The only works of lexicographical nature that deserve to be noted are F. Rodríguez Marín, *Un Millar de voces castizas y bien autorizadas*

que piden lugar en nuestro léxico (Ib.); and B. Quijada, *La Ornitología en el diccionario de la lengua castellana* (Santiago, 1918).

CATALAN. The productivity of scholars in this field continues, as is obvious from the following publications issued mainly by the Institut d'estudis catalans: L. N. D'Olivier, *Literatura catalan* (Barcelona), a panorama of its history; K. A. Hagberg, *Modärna Trubadurer; Ur Nuktansk digtning i vdra dagar* (Lund, 1919); P. Barnils, *Textes catalans, avec leur transcription phonétique précédés d'un aperçu sur les sons du catalan*, by J. Arteaga Pereira (Barcelona); the 8th fascicle of the *Diccionari Aquiló*. (Ib.) reaching as far as gall; A. Bulbena Tosell, *Diccionario catalán-castellano* (Ib.); and J. Givanel Mas, *Argot barceloni* (Ib.), a study of the slang of Barcelona.

PROVENÇAL. Only three works have come to hand, viz., O. Schültz-Gora, *Provenzalische Studien* (Berlin); J. Anglade, *Les Origines du Gai Savoir* (Toulouse, 1919); and H. Jaeschke, *Der Trobador Elias Cairel* (Berlin, 1919).

RHAETO-ROMANCE. The 12th section of the *Rätoromanische Chrestomathie: die modernen Dichter* (Erlangen), by C. Cammada and M. Decurtius, was a welcome contribution.

RUMANIAN. A few works deserve mention: H. Baric, *Albano-rumänische Studien* (Pt. I, Vienna, 1919); the first part of Puscaru, Sextil and E. Herzog, *Lehrbuch der rumänischen Sprache* (Czernowitz); N. Jorga and S. Gorceix, *Anthologie de la littérature roumaine* (Paris, 1919); and M. Beza, *Papers on the Rumanian People and Literature* (London).

PHONETICS. Among works of a general character are H. W. Pollak, *Phonetische Untersuchungen* (Vienna), with special reference to accent; and W. Perrett, *Some Questions of Phonetic Theory* (Cambridge, 1919), discussing perception of sound. The following works will be of use to students of the different languages to which they relate: A. Ehrentreich, *Zur Quantität der Tonvocale in Modern-Englischen* (Berlin); I. M. G. Ahern, *Phonetics of French Pronunciation* (London, 1919); and E. V. Zappia, *Di una vecchia questione di fonetica italiana* (Milan), which discusses a few of the orthographical variations of modern Italian.

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PHILOSOPHY. See LITERATURE, ENGLISH AND AMERICAN.

PHONETICS. See PHILOLOGY.

PHOSPHATE. According to the United States Geological Survey, the quantity of phosphate rock marketed in the United States in 1919 appeared to be less than in any year within the last decade except 1915. The production in South Carolina was nearly treble that of 1918, Tennessee greatly increased her output, and the Western States made a proportionately large gain, but a strike in the Florida pebble phosphate field, which lasted several months, so greatly reduced the output from that State that the record for the whole country showed a decided decrease in quantity. The value of the product in 1919, however, appeared to have been greater than in any year since 1913. According to estimates made by the Geological Survey, from incomplete returns, the quantity of phosphate rock sold in the United States in 1919 was about 1,941,-

700 long tons, valued at \$10,335,900, as compared with 2,490,760 tons valued at \$8,214,463 in 1918. Crude phosphate was formerly imported into the United States in quantities amounting to several thousand tons annually, but by 1919 the imports became practically negligible. From 1913, when more than 1,300,000 tons of phosphate rock was exported, the quantity leaving the United States steadily decreased until 1918, when it was only 143,455 tons, a little more than one-tenth of the exports in 1913. In 1919, however, as more vessels became available for commerce, the exports increased to 378,000 tons. In 1918-1919 most of the high-grade rock exported was sent to Sweden and Norway, and much of the land pebble to England, France, and Spain. Cuba and Canada also were notable consumers of phosphate rock mined in the United States. In 1919 Denmark was by far the largest importer of high-grade phosphate rock from this country and Sweden and Germany stood in the second and third places. England, the Netherlands, and Denmark took more than half the exports of land pebble, England taking the largest quantity by a small margin.

As to production, the notable feature of the phosphate rock industry in 1920, was the increase in production in the Western States. Total production of phosphate rock in the United States in 1920 was about 3,265,000 long tons, as compared with 2,249,000 tons in 1919.

PHOSPHATIC FERTILIZER. See FERTILIZERS.

PHOTOGRAPHY. See AERONAUTICS.

PHYSICAL CHEMISTRY. See CHEMISTRY, *General Progress of.*

PHYSICS. The year 1920 is again a notable year for progress in physics. The structure of the atom, mass spectrography of isotopes, crystal analysis, relativity,—were topics of the liveliest interest and fruitfulness. Perhaps the most extraordinary new event in physics is the publication of Aston's research results on isotopes, using the Thomson positive ray analysis with a new refined form of positive ray or mass spectrograph. The latter has become in the hands of Aston an apparatus of wonderful promise in atomic research. By a combination of electric and magnetic forces, the atoms of an element are made to describe parabolic trajectories, the length of which are proportional to the atomic weight of the atoms. The atoms following the parabolic path strike a photographic plate, thus autographically recording their own atomic weight on a scale of measurement easily and accurately established. For example neon (classic atomic weight 20.2) was projected and the points of impact 20 and 22 showed that the gas was a mixture of two kinds of atoms, both neon, but with atomic weights 20 and 22, respectively. The intensities of the respective photographic traces showed that the proportion was as 9 to 1, indicating that the neon atoms of atomic weight 20 were nine times as numerous as those of atomic weight 22. Aston has applied the method to many elements and found all (except hydrogen) of those investigated consisted of atoms of whole numbered atomic weights or of mixtures of different atoms each having a whole numbered atomic weight. Thus Dalton's theory that the atoms of a given element are equal is refuted. Likewise disappear the classic data as to fractional atomic weights,

the greatest obstacle to the theory of a single building unit of all the elements.

Aston shows that many of the elements are such mixtures of isotopes and gives a table of their number and their masses, the isotopes found being 2 each for boron, neon, silicon, chlorine, bromine, and 5 for xenon, 6 for krypton (and possibly hydrogen). The isotopes for chlorine were found to be 35 and 37 respectively. Harkins during the year reported the separation of hydrochloric acid by prolonged diffusion, the residual increasing in density at a rate confirmatory of Aston's isotopes, 35 and 37, of chlorine. To Harkins belongs the full credit of being the first to physically separate the atoms of an element into two portions of different atomic weights. Aston finds isotopes to be "elements having the same nuclear charge but different nuclear mass." If a positive and a negative particle both enter the nucleus, the charge is unchanged, but the mass changes as an isotope is formed. If a positive particle alone enters the nucleus, the element of the next higher number is formed.

Broensted and Hevsey have partially separated the isotopes of mercury by evaporating under reduced pressure about one-seventh of a given quantity of mercury and recondensing it. The lighter atoms are naturally the first to evaporate, so that the recondensed and the residual portions of mercury were found respectively lighter and heavier than the density usually given for ordinary mercury, by 80 millionths and 31 millionths respectively. The error of measurement was less than one part in a million.

Harkins has further developed his helium-hydrogen atom formation theory and has derived the formulas for the composition of each of the nuclei of the first 27 elements and of the radioactive elements using only the atomic weights and atomic numbers, upon the three assumptions: that the nuclear mass is the sum of the constituent masses; that the nuclei all consist only of helium nuclei, hydrogen nuclei, and electrons; and that not more than three hydrogen nuclei are present as such (except in isotopes). The remarkable success of Harkins in thus accounting for the nuclear composition of the first 27 elements is convincing evidence to support his contention that the hydrogen nucleus is the long-sought positive electron. One link yet remains, namely the experimental proof of the presumption that the helium nucleus is built up of hydrogen nuclei.

That the positive nucleus of an atom may be broken up was reported by Rutherford last year, a result attained while there was being printed in America a book expounding the latest views of the physics of the atom and containing the following dictum: "Changes in the nucleus . . . cannot . . . in any way be caused to happen artificially." Rutherford confirms by further experimental results the reported shattering of the positive nucleus of the nitrogen atom by bombardment with the alpha particles (nuclei of the helium atom) from radium C. Among the fragments shot off from the nitrogen atom Rutherford finds the hydrogen nucleus as before and also a new particle of mass 3, possibly an isotope of helium. The alpha particle moves at such high speed (18,000 miles per second) that in spite of its small size (27 billions in a cubic millimeter) its striking energy makes it the most powerful projectile available for physical

experiment. However, the hydrogen atom (one ten-millionth of a millimeter in diameter) is so small a target that to score a single hit requires 100,000 alpha particles shot through a centimeter of hydrogen gas. When a collision occurs (meaning that the alpha particle comes within a few billionths of an inch of the hydrogen atom) the impact is so powerful that the projectile (helium nucleus of mass 4) imparts its momentum to the hydrogen atom (mass 1) proportionately increasing its penetrating range which Rutherford carefully measures. By exposing nitrogen (or even nitrogen compounds) to a similar bombardment Rutherford still found the fragments to consist of hydrogen atoms and of particles of mass 3,—the first known controlled transmutation of an element. Rutherford has suggested other possible means of breaking up the positive nuclei. Ishada is now studying the effects of bombarding oxygen, nitrogen, and other elements by means of electrons, and then observing the spectrum in the vacuum tube. The subject is one of absorbing interest and important developments may be expected in this field.

Of particular interest in this connection is the triatomic hydrogen observed by Wendt and Landauer produced either by alpha ray action, alternating discharge at low pressure, or by passage through an ionizer. Thomson and Rutherford have both observed an atom of atomic weight three, but the Wendt atom seems to be more reactive. A lively question arises since the valency theory does not allow a hydrogen molecule of more than mass 2. D. Wood assumes that hydrogen has an isotope of nuclear mass 2 and charge 1 and also that there may be an atomic nucleus of mass 1 without a charge consisting of hydrogen nucleus and an electron closely united. The latter having no external field except very near, would pass freely through ordinary matter.

The utilization of natural energy by man is a problem of deep concern to physicists. It is fundamentally a physical problem and physics must cooperate with engineering by both data and research in unlocking nature's vast stores of energy and putting them at work for mankind. It is significant that several of our leading physicists are taking a deep interest in the subject. Both Lodge and Arrhenius have recently reviewed the subject of the world's supply of energy with characteristic thoroughness. The problem is a serious one, for the visible coal supply, according to Arrhenius, may not last 15 centuries at present rate and methods of use. For the more direct and scientific utilization of solar heat and light, Seymour's proposed "sunlight engineering" is an interesting new field of activity, covering such practical subjects as height of buildings; width of streets; disposition, shape, and size of windows; and the orientation of houses in azimuth.

The successful experiment near Cairo, where Shuman's solar power plant is harvesting a horse power for each 20 meters of exposed mirror, is of unusual interest and promise. The measure of the solar constant, allowing for transformation loss, shows that on every housetop enough radiant energy is wasted to do the entire manual labor of the household. Numerous similar experiments are reported, Coblentz and others attacking the problem by means of thermocouples which transform solar heat energy di-

rectly into electric currents. Far more fascinating is the eventual possibility of unlocking the vast stores of intra-atomic energy, the total amount of which is incredibly greater than all other sources of energy known. The first practical step in this direction was the discovery of radioactivity by Becquerel, the Curies discovering radium, and Schmidt discovering thorium, all of which are notably radioactive. The belief is growing that all substances are somewhat radioactive. The released energy is now known to be due to explosions of atoms in which particles and radiations are shot off at enormous velocities and with great energy. The radium series would yield in its cycle about 250,000 times the energy to be derived by burning an equal weight of coal.

Subatomic energy is believed by Eddington to be the only known adequate source of energy from which the sun and the stars could maintain their great furnaces. The extraordinary fluctuations in the radiation of the Cepheid type stars led him to assume that the pressure-temperature conditions were critical in such stars for the formation of helium gas from hydrogen and that the enormous short-period outbursts of energy thus released cause the characteristic variability of the Cepheid stars. A possible analogy is known in our own sun as the "hydrogen bombs" observed by Ellerman, and characterized by enormous explosive velocities of short duration. Rejecting the "contraction theory" as untenable and hopelessly inadequate, Eddington is driven to subatomic releases of energy, for which recent advances in physics prepare the way. Specifically, he suggests that when helium (atomic weight 4) is formed from four hydrogen atoms (atomic weight 4×1.008) the surplus fraction is released as free energy. The magnitude would be consistent with the measured loss of mass on synthesis, about 1 part in 120. If 5 per cent of a star's mass is hydrogen slowly combining into more complex forms, no other source of the star's heat need be looked for. The sun contains sufficient such energy to maintain its present heat radiation 15 billion years. Eddington adds significantly that this "seems to bring a little nearer fulfillment our dream of controlling this latent power."

Angeheister points out a relationship between solar activity, solar radiation, and terrestrial magnetism based upon the $26\frac{1}{2}$ day solar rotation period. An unusually interesting problem was the study of the effects of the great sunspot observed on the sun at the end of the year 1919 and since. At each rotation of the sun the passage of the spot across central position was followed by auroral display which culminated on the 22nd of March, 1920, in auroras of extraordinary brilliancy. Turner correlates sunspot periods and earthquakes in an interesting study showing the commensurability (correct to the hundredth part of a year) between the sunspot periods and earthquakes. On the long period (78 years, or seven times the single sunspot period) the earthquake period coincides within about a tenth of a year. An interesting observation and one which may have extraordinary importance in solar research is Douglas's confirmation of the repeated reports that the sunspot maxima and minima are periodically reflected in the thickness of the annual ring growth of trees.

The year 1920 marked a new triumph of phys-

ics in astronomical research in the real introduction of interferometry for the measurement of the diameters of the stars. In 1891 Michelson and Hamy had separately measured the diameters of Jupiter's principal satellites by the interferometric method and obtained concordant results. It is characteristic of the lag in making use of proposed methods that it is only after 30 years that the first results on star diameters have been obtained. As this article goes to press announcement comes that Michelson has obtained a measure of the diameter of alpha Orionis—the bright red star Betelgeuse of magnitude 0.7 in the constellation of Orion. The result is startling for it gives a diameter 300 times that of the sun, or a volume 27,000,000 greater than our sun. The principle is to admit the starlight by two parallel slits in the field of the telescope. The diffraction pattern formed depends upon the distance apart of the slits. For each size of star disc there is a definite distance apart for the discs at which the diffraction pattern disappears owing to the optical interference effect in the waves forming the two sets of diffraction fringes. By adjusting the slits until this occurs and measuring the distance apart, the angular diameter of the star disc is computed by simply multiplying the wave length used by 1.22 and dividing by the distance apart of the slits. Using the same method during the year Hale measured the position angle and distance interval of the binary star Capella, which had never been visually separated, but was known from spectroscopic evidence to be a binary. The measures taken early in the year showed the rapid orbital motion confirmatory of the spectrograms.

At quite the other end of the scale of measurement is the Weddington "ultra-micrometer" perfected and announced during the year by means of which lengths may be measured of the order of atomic diameters. He employs a parallel-plate condenser and inductance, making a circuit kept in oscillation with a thermionic valve. A change in the interval between the plates as small as one two-hundred millionth of an inch can easily be detected by the change of frequency detectable by "beats." The method is not limited by the length of waves of light producing interference fringes as in optical interferometry.

Pierucci assuming that the atomic volumes express the true volumes of the atoms only at absolute zero, finds for 29 elements that the atomic radii are integral multiples of one and the same length. Chadwick's incomplete work indicates that in general the number of free unit positive charges in the nucleus equals the atomic number. Collins adds that when the atomic weight is an even number the atomic number is half the atomic weight, and when the atomic weight is an odd number the atomic number can be obtained by subtracting one from the atomic weight and halving the result. Chlorine and nitrogen are the only two exceptions.

In view of the failure of the Bohr atom to give atomic properties concordant with those experimentally determined, Langmuir quite properly calls for as many models as can be devised to explain the facts. Bradford deems it possible to reconcile Langmuir's theory with that of Bohr. Langmuir makes this possible by accepting possible rotation or oscillation of the electrons about their assigned positions.

Of some interest in the present problem of sub-

atomic orbits is Birkhoff's suggestion, based on the dynamics of Sundman and Weierstrass, that the sum of the three distances is a system of three bodies (for example, the sun, earth, and moon) increased indefinitely. If the earth, sun, and moon are taken as three particles, the latter two will remain near each other but recede from the sun indefinitely.

Langmuir has proposed a helium atom with two electrons oscillating in semi-circular paths in the plane of the nucleus and symmetrical with respect to a second plane through the nucleus perpendicular to the orbital plane. He also suggests a hydrogen molecule in which the electrons move in separate orbits in a plane perpendicular to and bisecting the line connecting the two nuclei. The electrons are assumed to oscillate in different halves of the same circle, roughly, repelling each other as they approach and going back over the same paths. Oxley finding Langmuir's atom paramagnetic suggests that the two electrons rotate in the same circular orbit midway between the two nuclei, in the same plane, the fusion of the orbits being controlled magnetically (Oxley) instead of electrostatically (Bohr).

Hull believes that the several theories of atomic structure are nearer a harmonious and complete picture than we realize. The magnetic nucleus of Ritz makes the force determining the vibration dependent upon the velocity rather than the position of the electron. Bohr contributes the stable orbits. Thomson attributes to a skeletal structure of the nucleus giving rise to the Bohr stable orbits and the quantum relations connected with them. Sommerfeld has shown that the orbits, either circular or elliptical, can account accurately for spectral doublets. Millikan has shown that the absorbed energy must always exceed h times ν by the amount of the work necessary to detach the electron from the atom, and only the kinetic energy of the escaping electron is an exact quantum. Langmuir accounts for the known chemical properties by stationary electron shells concentric with the nucleus.

The exact data of spectral measurements have recently been made profoundly significant through Planck's law of radiation, that radiant energy is proportional to the radiant frequency, and through Bohr's law of constant angular momenta. The latter assumes that the angular momentum of the electron equals some whole number multiplied by a universal constant. The universal angular momentum gives the Rydberg fundamental frequency. Duane now calculates this frequency for eight elements (atomic numbers ranging between 13 and 74) and the computed results agree with observed values within a few per cent. Duane here assumes a distribution of electrons derived from the Lewis and Langmuir theory of the static atom. The attempt to derive physical results from the Langmuir postulates is of particular interest in view of the predictive success of the latter.

Allen regarding the electron as a rotating anchor ring of negative electricity suggests a theory of optical rotation, and finds a numerical expression for the amount of rotation per unit length. He portrays graphically the dextro- and laevo-rotatory forms of an optically active compound based on the Lewis-Langmuir structure. Langmuir stated to Allen in this connection that in practically all carbon compounds, eight elec-

trons surround the carbon nucleus, four pairs, each pair rotating about the line connecting the kernels of the adjacent atoms.

Priest continues his fundamental researches in chromaties. He finds that if two spectral distributions of light excite the same color they are always found to have the centres of gravity of the two distributions identical. Priest in a study of the stimulus for white light found by experiments on four observers that results show that the normal stimulus of white is equivalent to a black body at 5200 degrees absolute.

The crystal as the universal norm of structure of solids merits the closest study, for its architecture is the result of ultimate building units disposed by ultimate forces. Laue's theoretical foundation for the X-ray analysis of crystal structure has opened up the whole field of allocation of atoms with most fruitful results. The Braggs, Hull, Debye, and Scherrer, and others have obtained results with many crystals of elements and compounds. The use of powdered crystals has replaced the tedious work of observing with a single crystal and brought more rapid results. X-ray analysis now goes further than the mere allocation of the atoms in the crystal. Rinne showed that theoretically the effect of the electrons must be considered in determining crystal structure. Debye and Scherrer find ionization in crystals, for example, in sodium fluoride in which the number of electrons was derived from measures of the intensity of reflection from planes composed of a single type of atom. Born and Landé conclude that atomic structures are three dimensional and that the plane electronic system is not satisfactory. They had found that the compressibility computed on the Bohr basis was found not to give the observed compressibility. Landé therefore assumes that the symmetry of the electronic orbits is cubic. Bohlen during the past year found thorium and nickel to be composed of face-centred lattices and magnesium of two interpenetrating simple hexagonal lattices.

Bohlin has developed Debye and Scherrer's method of X-ray crystallography by pulverized crystals, in which the latter is formed into a concave cylindrical surface exposed to a divergent beam of X-rays devised to produce spectrograms of sharply defined lines. By the new method Bohlin determined the space lattices of aluminum, thorium, niton, and magnesium.

Bragg finds an empirical relation for interatomic distances and crystal structure such that crystals may be pictured as groups of spheres of appropriate diameters held in relative positions by contact with their neighbors. The distance between centres of any two neighboring atoms may be expressed as the sum of two constants (these being the respective radii of the two spheres). He only claims fairly close approximate validity for the empirical relation which he suggests as useful in the analysis of complex crystal structures where various arrangements of the atoms have to be tried out to explain the intensities of the reflected X-ray spectra produced by diffraction in the crystal.

As a result of laboratory and field studies of the elements of the earth's crust, Washington suggests the probability of an outer surface layer of petrogenic elements (occurring as oxides, silicates, chlorides, and fluorides), under which is a zone of nickel-iron, and below this a central core of metallogenic elements (occurring as

ores). This agrees with Abbot's suggested distribution of the elements in the sun. Washington also shows from analyses that the average densities of the continents, ocean floors, etc., are in inverse relation to their elevation, a fact confirmatory of isostatic theory.

After 30 years of painstaking mathematical work, Brown has issued his new tables of the motion of the moon. These take account of 1500 separate terms which might appreciably affect the determination of the moon's position. While every term has been considered which might influence the lunar position neither Newton's nor Einstein's theories fully explain the moon's motion. The tables mark an epoch quite comparable to the Clairaut tables of 1752 and Delaunay's issued in 1911, for the values of each term are worked out once for all for use in navigation and astronomy.

American physicists will greet the 1920 edition of the Smithsonian tables with satisfaction. Fowle, the compiling editor, found the six years since the previous edition fruitful in numerical data calling for entirely new or revised tables. Certain new subjects have been added, such as astrophysics, meteorology, geochemistry, atomic and molecular data, colloids, and the coöperation of the leading national laboratories was secured in making the new edition as authoritative as possible. Useful as the volume may prove, physicists increasingly realize the imperative necessity of an agency for making promptly and universally accessible the newly acquired numerical data pertinent to physics. Again, since specialists notoriously are no more able to keep abreast with their own literature, systematic reviews of each topic of physics are called for, somewhat after the manner of recent symposia. The forthcoming "Physiological Review" furnishes a model, for it will give no abstract, but furnishes each quarter with well prepared and thoroughly assimilated reviews of all topics in this science. America should have a similar journal for physics.

Humphrey's "Physics of the Air" marks an era in American meteorology, for the author is in close touch with both subjects and will furnish a reliable collation of the physics of the atmosphere for basic weather research. A practical correlation shown is a graphic chart of the pyrheliometric values and mean temperature departures as related to sunspot numbers and violent volcanic eruptions. This correlation shows the startling effect of volcanic dust driven into the upper (the isothermal) stretches of the atmosphere resulting in lowered surface temperatures over the earth for prolonged periods.

The third crucial test of the validity of Einstein's theory of relativity is reported as confirmed numerically by Grebe and Bachem. Others express doubt. Einstein had predicted that a strong gravitational field would slow down luminous vibrations to lower frequency, resulting in a shift of the spectrum lines toward the red, amounting, as he computed in the case of the sun, to a shift caused by a radial velocity (recession) of the light source of 0.6 kilometers per second. Grebe and Bachem are reporting as finding a shift equal to a Doppler effect of 0.56 kilometers per second. If confirmed, the three effects claimed as unique consequences of the relativity theory are now quantitatively verified. Since the three predictions were counter to classical physics their verification numerically and



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MOVING PLYMOUTH ROCK
300th Anniversary of the Landing of the Pilgrims

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qualitatively is probably without a parallel in the history of science.

Heated controversy wages over many of the implications of the theory, some opposing the theory as radical since other mathematical procedures are possible. Slate would make general the Newtonian relations for energy, momentum, and force, holding that relativity and Newtonian dynamics may be adjusted to eliminate contradictions and reestablish them as properly equivalent procedures. Holst praises Einstein's success in establishing covariant expressions for general physics but believes many of the results may be obtained from simpler considerations. Larmor holds that what remains of the original notion of relativity coincides with the principle of Newton, Faraday, and Maxwell, originated by Descartes, that the operations of nature are elaborated in a fourfold extension according to a scheme purely differential, that is by transmission from element to element of the cosmos, in no case leaping across intermediate elements as action at a distance would imply. Evershed, doubting the Einstein effect on the basis of his Venus results, still finds the cyanogen band and metal line displacements of the right direction and magnitude for the relativity view. St. John's recent measure from iron lines and the magnesium triplet in the green give displacements smaller than required by Einstein.

So the controversy stands. The apparent confirmations of Einstein's formulas deduced from his theory has aroused profound interest among physicists and has brought the most fundamental concepts of philosophy into the heart of physics. Certainly the implications and conceptions of the finitude of the universe, spherical space, and the meeting of the ends of a straight line, and other almost grotesque deductions will awaken discussion. Perhaps most startling is the computation of the volume of the new universe, that is of the new finite but endless "spherical space."

$$7 \times 10^{41}$$

The expression is that the volume =

$$\sqrt{p^3}$$

cubic centimeters where p is mean density of distribution of matter.

Last year this review quoted Planck's opinion of Einstein's work. Perhaps the most fulsome tribute to the general relativity theory of Einstein is given by Schlick who has written an excellent treatise on the theory. He says: "The structure of the universe which the general theory of relativity unveils to us, is astounding in its logical consistency, imposing in its grandeur, and equally satisfying for the physicist as for the philosopher. . . . The world is not confined by any boundaries, and is yet harmoniously complete, for no energy or matter can wander off to infinity, because space is not infinite. . . . By a combination of physical, mathematical, and philosophical thought, genius has made it possible to answer, by means of exact methods, questions concerning the universe which seemed doomed forever to remain objects of vague speculation. Once again we recognize the power of the theory of relativity in emancipating human thought, which it endows with a freedom and a sense of power such as has been scarcely attained through any other feat of science."

PHYTO-PATHOLOGY. See BOTANY.

PIERREFEU, JEAN DE. See FRENCH LITERATURE.

PIERS. See DOCKS AND HARBORS.

Y-B-20-24

PILANDER, Admiral A. A. L. Stockholm, Sweden, died August 9.

PILGRIM TERCENTENARY. The 300th anniversary of the year (1620) when the Pilgrims sailed from England to find a home in America was celebrated in 1920 by ceremonies in Great Britain and the Netherlands as well as in the United States. As was noted in the preceding YEAR BOOK the Federal government decided to participate in the celebration and in June, 1919, a committee of Senators and Congressmen was appointed to confer with the Massachusetts State officials to that end. The preliminary activities of societies of *Mayflower* descendants and other bodies were also noted in the article CELEBRATIONS in that volume. In the United States, the President issued a proclamation, August 4, calling upon the people to participate. This met with a prompt response throughout the whole country. Hundreds of thousands of dollars were appropriated by the cities and nation, and about 2000 cities organized ceremonies including pageants and religious exercises, which lasted from August to the close of the year. Exercises were held at Provincetown, Mass., August 20th and August 30th, in which representatives of Great Britain, France, and the Netherlands took part. The celebration included a parade with many floats representing historical incidents, and addresses from the American Secretary of State and the Dutch representative. Other ceremonies followed at Provincetown in September, November, and December, including the celebration on November 11th of the signing of the compact on board the *Mayflower* when she was in the Provincetown harbor. November 21st was observed as the Pilgrims' sabbath. Exercises were held at Plymouth December 31st, including speeches by prominent Massachusetts officials. It was provided that the final celebration should be held at Plymouth in the summer of 1921.

Abroad many commemorative exercises took place in Great Britain and the Netherlands. In February Washington's birthday was celebrated in London with special reference to the Tercentenary and speeches were made by the Lord Mayor and the Lord Chief Justice, to which the American ambassador replied. The earliest pageant was staged at Southampton, July 24. The official celebration took place, September 23, at Plymouth, England, where a pageant was performed around the so-called "Pilgrim Stone," which marked the point from which the Pilgrims had departed. This was witnessed by some 20,000 people. It was followed by a reception in the Guildhall, religious ceremonies, and other celebrations during the week. The event was also celebrated at Dartmouth, September 8, Southampton, September 10, Torquay, September 12, and many other places, including Boston, England. In the Netherlands, the celebrations began at Leyden, August 29, when a memorial service was held at the place where the chief Pilgrim father, John Robinson, had lived. On the same day similar services were held at Amsterdam, where also a meeting attended by about 2000 Dutch, American, and British delegates was held. On September 2d, a boat trip was made along the canal over which the Pilgrims had traveled.

PINES, ISLE OF. An island off the western end of Cuba comprised within the Province of Havana. Area, 986 square miles.

PINK BOLL WORM. See COTTON.

PITTSBURGH, UNIVERSITY OF. An institution of the higher learning, at Pittsburgh, Pa.; founded in 1819 under the name of Western University of Pennsylvania, present name adopted in 1908. The enrollment for the summer session of 1920 was 824, and for the regular fall term, 5256. There were 579 members in the faculty. The library contained about 150,000 volumes. The Alumni Hall was almost ready for occupancy, and cost \$550,000. It was the gift of the alumni. President, John Gabbert Bowman, A.M., LL.D.

PLANT BREEDING. See BOTANY.

PLANT DISEASES. See BOTANY.

PLANT PHYSIOLOGY. See BOTANY.

PLANTS, POISONOUS. See VETERINARY MEDICINE.

PLATINUM. With an American stock of platinum at the beginning of 1920 stated at 29,228 troy ounces, or slightly below normal, there were maintained for the first two months of the year the record prices that ruled in 1919. However, notwithstanding the continued absence of large supplies of Russian platinum, imports from Europe increased and platinum from the Choco region and the Cendoto and San Juan rivers of Colombia, South America, reached the United States in increased amounts. In the first nine months of 1920 American imports of platinum amounted to some 58,700 ounces indicating a total for the year of nearly 78,300 ounces or 23,800 ounces more than were imported in 1919. The result of these increased imports and a strike of jewelry workers in the Eastern United States was that the price of platinum fell to \$82 an ounce by June, but rallied when jewelry manufacture was resumed to \$117 per ounce in early September. Subsequently due to slackened demand it steadily declined until at the end of the year a price of \$75 an ounce was reached which had not prevailed since 1916. Of course Russia with her extensive platinum fields was the key to the situation, and it was apparent that until production there was secured there would hardly be a return to pre-war prices. It was considered likely that some small amounts of platinum might enter commerce from Russia through various channels, or with political developments and proper financing some large amounts, but everything depended on the many uncertainties of the country. Larger supplies were received from Colombia in 1920 and with more extensive and more efficient operation it was expected that South American platinum would continue to figure more and more in the world's trade. See ALASKA.

WORLD'S PRODUCTION. Statistics of the world's production of platinum and allied metals supplied by the United States Geological Survey on the basis of most reliable information obtainable were as follows:

ESTIMATED WORLD'S PRODUCTION OF CRUDE PLATINUM, 1911-1919, IN TROY OUNCES									
Country	1911	1912	1913	1914	1915	1916	1917	1918	1919
Borneo, India, and Sumatra			200	(*)	18	9	52	(*)	(*)
Canada	30	30	50	30	100	60	80	30	30
Colombia	12,000	12,000	15,000	17,500	18,000	25,000	32,000	35,000	35,000
New South Wales and Tasmania	470	778	1,500	1,248	303	222	330	1,606	1,326
Russia	300,000	300,000	250,000	241,200	124,000	63,900	50,000	25,000	30,000
United States	628	721	488	570	742	750	605	647	824
	313,128	313,529	267,288	260,548	149,163	89,941	88,067	62,288	67,180

* No basis for estimate. * India only. * Dutch East Indies and India. * Tasmania only.

PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. This association was organized in 1906 to help in the establishment of year-round municipal recreation systems. Since the war there has been great interest in physical education, and the association feels that it has much to do in this direction. During 1920 the association, as usual, sent field workers into communities desiring their services to help plan the work, and to secure municipal appropriations, published a number of pamphlets, and a monthly magazine, *The Playground*, answered through correspondence thousands of inquiries from all parts of the world regarding various phases of community recreation, and maintained an employment department for the service of recreation officials and workers throughout the country. Legislation with appropriations has been gained in many of the States and cities for recreational purposes. Compulsory physical education laws have been urged by the National Physical Education Service in both State and Federal legislatures. Considerable progress is reported. The officers for 1920 were: President, Joseph Lee; treasurer, Myron T. Herrick; and secretary, Howard S. Braucher. Headquarters are at 1 Madison Avenue, New York City.

PODOLIA. Formerly a government of the Russian Empire, but after the revolution comprised within the territory of the Ukrainian Republic; situated to the east of Galicia and between Volhynia and Bessarabia. Area, 16,224 square miles; population, estimated, Jan. 1, 1915, 4,127,600. Capital, Kamenets Polsk, with a population before the war estimated at 52,000, of whom one-half were Jews.

POETRY. See LITERATURE, ENGLISH AND AMERICAN; also articles on French, German, Spanish, and Scandinavian Literature.

POINCARÉ, LUCIEN. French mathematician and physicist, brother of the former president, Raymond Poincaré, and vice-rector of the Academy, died, March 9. He was one of the leading authorities on modern education in France. He taught in the provinces during his early career, but returned to Paris having obtained the degree of Doctor of Science. His works on modern physics and electricity gave him a world-wide reputation. After teaching in the university for some years, he entered the administration and was successively inspector-general of lycées and colleges, director of secondary education, and director of higher education. In October, 1917, he was appointed head of the University of Paris.

POISONOUS PLANTS. See VETERINARY MEDICINE.

POLAND. A European state reconstituted as a result of the war and comprising the territory formerly divided among the great powers of Austria-Hungary, Russia, and Prussia after the three partitions of Poland in 1772, 1793, and

1795; boundaries still indefinite at the close of 1920. Before the partition of 1772, the area was 274,018 square miles but this did not represent all the territory which at that time was ethnologically Polish, a number of territories having already been annexed by Austria and Prussia. A Polish estimate in 1919 placed the area at 135,267 square miles and the population at 36,234,727. During 1920 in the discussions of the subject the estimates varied widely from this figure. Before the war Russian Poland had an area of 43,946 square miles with a population estimated Jan. 1, 1915, at 12,247,600, of whom according to the Russian census of 1897, 71.8 per cent were Polish. Roman Catholicism was the religion of about three quarters. The capital is Warsaw, with a population before the war of 909,491; estimated (1919), 820,180.

PRODUCTION, ETC. It has been estimated that 85 per cent of the total area is productive, and about 50 per cent under cultivation. The chief agricultural products have been wheat, rice, barley, oats, and sugar beets. Before the war Polish territory produced great numbers of live stock, especially pigs. In the production of sugar it ranked third before the war and in the production of potatoes it held the second place. The chief minerals are coal, iron ore, zinc, and lead ore, mineral salt, and rock oil. The output of petroleum in Galicia has been placed at 5 per cent of the world's production. The new territory acquired is rich in minerals and in general the mineral wealth is next in importance to the agricultural resources. No later figures for production and commerce were available than those given in the preceding YEAR BOOKS. The railways open for traffic in 1919 had a mileage of 7295. During the year 1920 the first railway line built by Poland since the armistice was formally opened for traffic between Kutno and Strzalkow, 111 kilometers (68.97 miles), effecting a cutoff of 71 kilometers (44.12 miles) in the rail connection between Warsaw and Posen. It had been determined in February, 1919, to undertake construction which was begun the following July. Temporary bridges at first were used but as operation progressed work was prosecuted on building second track and permanent bridges. The new line was intended also to serve as a link in the projected International Transcontinental Railway between Vladivostok, Moscow, Warsaw, Paris, and London. A merchant marine was in process of construction, the Parliament having provided for 220,000 gross tons, including 20 vessels of 8000 tons and 10 of 3000 each, together with small craft for the coast trade. The revenue for the nine months ending March 31, 1920, was placed at 3,060,594,213 Polish marks and the expenditure at 15,158,562,352 Polish marks. (See NAVAL PROGRESS.) At the beginning of 1920 the Polish army was estimated at 700,000 men and 14,000 officers. The military budget for the nine months ending March 31st was estimated at 7,496,184,060 Polish marks.

GOVERNMENT. The constitution under consideration in 1920 provided for universal suffrage of both sexes. Executive power was vested in a president who was commander-in-chief of the army, elected by plebiscite for seven years from two candidates proposed from the Sejm or national parliament. Legislative power was in the Sejm or parliament and in the president, the latter having the veto power. The President in

1920 was Gen. Joseph Pilsudski, elected Feb. 20, 1919.

The ministry at the beginning of the year was as follows: General Leszniewski, Minister of War; M. Grabski, Minister of Finance; M. Hebdzinski, Minister of Justice; M. Iopuszanski, Minister of Public Instruction; M. Olszewski, Minister of Commerce and Industry; M. Bardell, Minister of Agriculture; M. Coyree, Minister of Transportation; M. Tolloczko, Minister of Posts; M. Kenzidor, Minister of Public Works; M. Sliwinski, Minister of Food; M. Opolowski, Minister of Labor; M. Seyda, Minister of the Former Prussian Province. Owing to the internal disorders, a cabinet crisis occurred and on June 24th a new ministry was constituted as follows: Premier and Minister of Finance, M. Grabski; Minister of War, General Leszniewski; Minister of Foreign Affairs, Prince Eugene Sapieha; Minister of Food, Stanislas Slivinski; Minister of Railroads, M. Bartel; Minister of Posts and Telegraphs, M. Tolloczko; Minister of Education, M. Lopuszanski; Minister of Commerce and Industry, Antony Olszewski; Minister of Public Health, M. Chodzko; Minister of Public Works, Gabriel Narutowicz; Minister of Agriculture, Professor Bujak; Minister of the Interior, M. Kuczynski; Minister of Justice, John Morawski.

CABINET CRISIS. As noted in the last YEAR BOOK the Paderewski government fell from power Dec. 7, 1919, and was succeeded by the new ministry mentioned above under *Government*. In March a revolutionary strike was narrowly averted, following serious labor disorders in Warsaw and in Galicia but in spite of that, protests against the government continued and resulted in attacks upon the ministry in Parliament. A cabinet crisis followed which ended June 24th with the forming of the new ministry which is also noted above under *Government*. The Radical element including members of the Socialist and Workingmen's parties were dissatisfied and declared their lack of confidence from the first. Meanwhile elections of the Diet were held on May 16th resulting in the following apportionment of seats among the respective party groups: German National People's party, 34; Independents, 21; Social Democrats, 19; Centre, 17; Free Economic Association party, 12; German Democratic party, 10; Polish, 7.

HISTORY

POLAND AND THE SOVIET GOVERNMENT. On January 9th the Polish government declared that it would send troops into the Ukraine, General Denikin having now evacuated that region, and would thus check the advance of Bolshevism. In the latter part of January the Soviet government renewed its demands for peace which had been made on Dec. 22, 1919, saying that it had from the first recognized the independence of the Polish Republic and that no question remained that could not be settled by peaceful means. The Polish terms were submitted February 24th, including self-determination for the population west of the frontier of 1772, indemnity for damage done by Russian troops in Poland and under the Russian government to Polish citizens in Russia. The Supreme Council protested February 28th, that Poland's eastern boundary as agreed upon Nov. 25, 1919, lay far to the west of the region claimed. Military operations were resumed early in March. An offensive alliance was formed between Poland and the Ukraine to-

ward the end of April. By June 1st the Soviet troops were driven out of Little Russia, but during that month Polish and Ukraine forces were in turn repulsed.

DANGER OF BOLSHEVISM. The efforts of the French on behalf of Poland had for their motive in part the fear that unless Poland withstood the wave of Bolshevism, all western Europe might succumb to it. In French political discussions throughout the year there was constant insistence upon the necessity of a strong Poland which would serve as a rampart against attacks of Bolshevism. The French wished to prevent the Bolsheviks from getting a foothold on the Vistula or in the coal fields of the former Russian Poland and former Austria Silesia or in the Polish part of the former duchy of Teschen. The coal regions of Teschen were in the territory of Czecho-Slovakia. With the Bolsheviks in Upper Silesia there would be grave danger to this region. If the Bolsheviks held the territory as far as the Vistula, the English fleet could accomplish nothing against them. Moreover, if the Lithuanians, Letts, and Estonians were surrounded by Bolsheviks they would have no protection from Red propaganda. Such considerations as these were constantly urged by the French press throughout the year as showing the need of protecting Poland, and they professed not to be able to understand why the other Allies could not see this same necessity.

DEFEAT OF THE BOLSHEVISTS. Polish successes continued in September and by September 17th the fortified city of Lutsk was taken, giving the Poles the virtual mastery of a considerable territory; and soon afterwards a general Polish advance along the southern front was driving the enemy out of Eastern Galicia. To the north and east of the river Dniester, the Ukrainian forces were aiding the Poles. Toward the end of September the Poles began an advance toward Grodno on the northeast front, and by September 29th they had taken the city of Lida. As their march now faced toward Vilna, the Lithuanian government took alarm (see LITHUANIA). The Red forces also began to retreat north of the Pripiet River. By September 30th the Soviet troops had been defeated on the entire northern front and were fleeing to the east, closely pursued by the Poles. At that time the number of prisoners taken by the Poles was reported by them at 26,000 and the Poles also claimed to have captured the entire staff of the fourth Bolshevik army. On October 3d the pursuing Polish cavalry reached Minsk and in this region the defeat of 16 Bolshevik divisions was announced, including the capture of 42,000 prisoners, along with munitions, machine-guns, and other war material. Meanwhile General Wrangel was down to this time reported to be successful in his attacks upon the Red forces of the Crimea. The situation looked desperate to the Bolsheviks and impelled them to accept terms of peace favorable to Poland. Meanwhile, peace negotiations had been going on at Riga since September 21st. A few days before, the head of the Polish delegation, M. Dombiski, and the head of the Soviet delegation, M. Adolph Joffe, had met at a preliminary conference. After the proposals of the Russians and the counter-proposals of the Poles had been presented, the Russian delegate, M. Joffe, suddenly presented the final Russian terms, saying that the Soviet government would at once begin its winter campaign if an armistice were not con-

cluded within 10 days. These terms amounted to an acceptance of the position which the Poles had taken at the conference of Minsk. They were a complete back-down from the former Russian attitude. According to them, the Russian Soviet government accepted the view of Poland that the reduction of the Polish army, the surrender of arms, the demobilization of Poland's war industries, and other demands previously made by the Soviet government could not be conceded. The Soviet government renounced these terms. The Poles thereupon submitted among other proposals the following: Recognition of Polish sovereignty and non-interference in Poland's domestic affairs; renunciation of indemnities for the expenses of the war; exchange of war prisoners; mutual amnesty for Russian and Polish citizens; freedom of Poland from any obligation arising from its former status as part of the Russian Empire; allowance of sufficient time for the formation of the terms of the treaty, which should be immediately negotiated, etc. Committees were appointed and set to work on the studying of these proposals. On October 5th the respective leaders of the Polish and Soviet delegations agreed on the terms of an armistice beginning October 8th. According to the outline of these terms at that time published, the principal points were as follows: Recognition of the independence and sovereignty of Poland and renunciation of all subversive propaganda in Poland; acceptance of a boundary cutting off Lithuania from Russia and granting Poland a corridor; acceptance by Poland of any form of government that the Russians should set up in White Russia and the Ukraine; the abandonment by Russia of claims to East Galicia, the destiny of that region to be settled between Poland and the Allies. The treaty was signed on October 12th. Its terms appeared to be generally acceptable, but the extreme war-like parties in the countries concerned were not satisfied, and in Lithuania there was resentment at the granting of the corridor to Poland.

THE VILNA AFFAIR. For the complication arising from General Zeligowski's occupation of Vilna see article WAR OF THE NATIONS. At the close of the year this problem was still causing difficulties though many methods of adjustment had been discussed. The envoy of the Soviet government protested December 11th, saying that it had proof that war supplies were furnished by the Polish government to General Zeligowski. The Russian envoy also protested against the action of the League of Nations in proposing to send an expedition to Vilna. The Polish minister of foreign affairs replied sharply to these protests. He pointed out that General Zeligowski was not occupying territories which were contiguous to the Soviet republics. Throughout the closing months of the year negotiations were going on between Poland and Russia with a view to making peace a permanent one.

UPPER SILESIA. The date for the plebiscite in Upper Silesia was fixed on Jan. 17, 1921. Polish claims were supported by France. The matter was of great importance because the region, which had an area of some 5000 square miles, was considered one of the richest in Europe on account of the great wealth of its coal deposits. The subject was much agitated in the closing weeks of the year. See WAR OF THE NATIONS.

POLAR RESEARCH. While the year has not been marked by any important additions to

research in unknown polar lands, yet current activities hold forth promise in the near future. The most notable expeditions in 1920 were those of Amundsen, who returned to Nome unsuccessful in his trans-polar drift and again set out in renewal; the initiation of Koch's explorations of northern Greenland; the success of Hansen in establishing at Cape Columbia, Grinnell Land, a relief depot for Amundsen; MacMillan's preliminary trip to Baffin Bay to gain knowledge for his Baffin Land explorations of 1921; and the Antarctic expedition of Cope, with Falkland Islands as the primary base.

ANTARCTIC. A long and perilous journey is planned by Dr. J. L. Cope, commander of the British Imperial antarctic expedition. As originally proposed the expedition was to be gone for five years, during which the great, ice-clad continent of Antarctica was to be explored by a large airplane, to which a sledge was to be attached. Cope hoped to ascertain the possibility of mineral or other resources capable of exploitation. In a way it is possible that these researches would inure to the development of the Falkland Island Dependencies (q.v.). The scope of the expedition appears to have been modified. Cope sailed in June, 1920, for the purpose of charting the western coasts of Weddell Sea, and obtaining such information as would enable this land to be made a base of operations. It was thought that such surveys would take 18 months. Cope cabled from Port Stanley, Falkland Islands, as follows: "Am sailing from here December 20th with full equipment and dogs. Hope to land at Graham Island December 25th. All the party well. Expect to hear from us in 18 months."

ARCTIC. The most interesting phase of arctic exploration during the year pertains to the Amundsen expedition. He planned to push into the polar ice in the Siberian Ocean, and when beset to drift across the arctic zone. This method, initiated by De Long in the *Jeannette*, was later followed by Nansen in the *Fram*. Meeting with conditions unfavorable to besetment, Amundsen was obliged to put the *Maud* in winter quarters at Aion Island, Siberia, not far from Bering Strait. Frozen in until July 7th, the *Maud* then proceeded to Nome, Alaska, where refitting she renewed her voyage on August 8th. When last heard from, September, Amundsen was attempting under unfavorable conditions to enter the main pack north of Wrangel Land. The *Maud* was then wedged in the ice 20 miles north of Cape Serge, Siberia. The results of his exploration of the Siberian coasts were valuable. He discovered and explored a new land near the Nicholas II archipelago. He now goes down to history as the only one who has navigated the northern coasts of both America and Asia. From the winter quarters at Aion Island, Sverdrup visited the primitive Tchutchee tribes and studied their life conditions. Large scientific collections were made of birds, mammals, mammoth remains, etc., while observation of tides, weather, magnetism, etc., were systematically made. To ensure the safety of his first year's work Amundsen sent a sledge load of the most important records and collections, under two sailors, Tessem and Knudsen, to be forwarded to Norway from the nearest Siberian village. The men evidently perished, as no traces of them have been discovered despite active search. In his renewed voyage Amundsen is accompanied by only three men, the rest

of the party leaving the expedition at Nome.

The safety of the Amundsen expedition caused the sending of a relief party to lay down food supplies at various points. In 1919 the Norwegian government asked the cooperation of the Danish government to lay down a depot on the arctic coast of north Grinnell Land, to meet any exigencies that might arise from the drift of the *Maud* to this sea. The performance of this duty was entrusted to Capt. Godfrey Hansen, Royal Danish navy, who was especially fitted for this work through his extended and successful field work while serving as a subordinate to Amundsen in the magnetic expedition to the north magnetic pole in 1903-04. Hansen made the base of his expedition at Thule, Robertson Bay, a station established for the care and benefit of the Etah Eskimo. In the autumn of 1919 Hansen organized a field party of Eskimo and established advance depots for the spring work. On March 16, 1920, he left Thule with a large force, taking about 200 dogs and 16 sledges. Open water and drifting floes made it impossible to cross Kane Sea to Grinnell Land. The route followed was northward over the shore ice, past the great Humboldt glacier of Kane and Cape Constitution of Morton. Reaching Franklin Island, of Hall, the supporting sledges were sent back, while the advance part crossed Kennedy Channel to Discovery Bay, Greely's station in 1881-83. The station proved useful to the party, both in going and in returning. Leaving hunters at this point, who killed large numbers of musk-ox, Hansen proceeded north, and on April 20th reached the most northerly land, Cape Columbia, 83° 07' N., within 413 geographical miles from the Pole. Here he left ample provisions, ammunition, etc., and a detailed map of the best route to the south for Amundsen's possible use. Returning safely Hansen reached Thorshavn, Iceland, October 7.

A Danish commemorative expedition is now engaged in the thorough survey of northernmost Greenland. It is led by Lange Koch, an associate of Rasmussen in the second Thule, Greenland, expedition. This expedition is to celebrate the bicentenary of the introduction of Christianity into Greenland, by the missionary Hans Egede, in 1721. Koch left Denmark July 15, 1920, for Greenland, where he was to establish his base of operations at Robinson Bay, Inglefield Gulf. With one white companion, Slott, a traction engineer, Koch will depend entirely on Eskimo subordinates. By novel arctic transportation, especially constructed tractors, an advance depot of supplies was to be cached in the summer of 1920 on Warming Land, south of Sherard Fiord. With the Warming depot as an advanced base, in 1921 a dog-sledge party will exhaustively search Independence Fiord, for the missing field records of Mylius Erichsen, who perished there in 1907, while in command of the *Danmark* expedition. Later the extreme northern parts of Hazen Coast (Peary Land) will be surveyed from the farthest of Lockwood and Brainard—the world's record of the Greely expedition, 1881-84,—to Peary's farthest on the northeast coast, 1900. It is to be noted that the Danish government, with its usual liberality, has lately published the scientific results of the *Danmark* expedition, 1906-08, to extreme northeast Greenland, where Erichsen and Koch completed the circumnavigation, and so absolutely determined the insularity of Greenland, previously suspected but not really known. Special attention is given to the eth-

nology of the extinct tribes of Eskimo who lived on this inhospitable coast many ages ago.

Jan Mayen—a no man's land—has been occupied by Norwegian subjects, whether temporarily or permanently is not stated. While no reason for this occupation is given, it may be surmised that its mineral and other possible resources will be investigated. If sufficiently plentiful and easily accessible for commercial exploitation, Jan Mayen may succeed Spitzbergen and Bear Island as sources of raw material. Among the results of the last Katmai expedition of the National Geographic Society to Alaska, are insect collections among which are many new to science, and advances in vulcanology through researches by the Carnegie Geophysical Institution of Washington. Ethnological researches by Jenness of the Eskimo east of Colville River, show that they are self-supporting for all purposes—clothing, food, and shelter, but their future depends on the survival of trapping conditions. The entrapping by ice of the *Polar Bear* off the Siberian coast, near Wrangel Land, were grounds for a sledge relief party from Nome, in November.

POLITICAL AND SOCIAL SCIENCE, AMERICAN ACADEMY OF. The American Academy was organized nearly 30 years ago as a forum for the scientific discussion of social, civic, industrial, and economic topics. The Academy publishes as its official organ a bi-monthly journal, known as *The Annals*, in which discussions on questions of national or international importance are presented. These volumes are sent to all members. During the year 1920 the following volumes were published: January, *The New American Thrift*; March, *Bonds and the Bond Market*; May, *Present Day Prices*; July, *Industrial Stability*; September, *Labor, Management, and Production*; and November, *Social and Industrial Conditions in the Germany of To-day*. The following officers were elected at the annual meeting: President, Dr. Leo S. Rowe; vice-presidents, Carl Kelsey, Charles W. Dabney, and David P. Barrows; Secretary, James P. Lichtenberger; editor, Clyde L. King; and treasurer, Charles J. Rhoads. Headquarters are maintained care of West Philadelphia Post Office, Philadelphia, Pa.

POLITICAL ECONOMY. Economic subjects are re-treated under their respective heads in this volume. A discussion of them will be found in such articles as BANKS; COÖPERATION; FINANCIAL REVIEW; LABOR ARBITRATION AND CONCILIATION; OLD AGE PENSIONS; RAILWAYS; SOCIAL INSURANCE; STRIKES AND LOCKOUTS; TARIFF; TRADE UNIONS; UNEMPLOYMENT; etc. See also LITERATURE, ENGLISH AND AMERICAN, AMERICAN ECONOMIC ASSOCIATION. Representatives of the Association were appointed early in the year to serve on the directorate of the National Bureau of Economic Research and to take part in the American Council of Learned Societies. Professor Allyn A. Young who offered his resignation at the annual meeting of December, 1919, was succeeded as secretary and treasurer by Professor Ray B. Westerfield of Yale University. In response to a request of the Internal Revenue Bureau early in September the Association sent one of its members, a tax expert, to attend the conference of revenue officials at Washington in respect to changes in the forms and schedules for the tax year 1920. The 33rd annual meeting of the Association was held at Atlantic City, December 27-30, and the

following papers were read: "The Railroad Situation: An Appraisal," by Frank H. Dixon; "Our Foreign Trade Balance since the Armistice," by John H. Williams; "An Introductory Survey of the Bituminous Coal Industry"; "The Irregular Operation of the Coal Industry," by F. G. Tryon; "Costs and Prices in the Coal Industry," by David L. Wing; "The Marketing of Coal," by George H. Cushing; "The Transportation Problem in the Coal Industry," by A. G. Gutheim; "Comments of an Ore Engineer," by Arthur J. Mason; "The Theory of Production," by Leo Wolman; "An Index Number of Production," by Walter W. Stewart; "A Revaluation of Traditional Economic Theory," by Carl E. Parry; "Soundings in Non-Euclidean Economics," by J. M. Clark; "Profits and Income," by Henry R. Hatfield; "Federal Taxation of Profits and Income," by F. R. Fairchild; "A Review of Federal Reserve Board Policy," by O. M. W. Sprague. There were "round table" discussions of the teaching of elementary economics and on farm marketing, in the course of which several papers were read on special aspects of the latter subject. The president's address was on the subject of "The Post-War Outlook." Officers, Herbert J. Davenport, president; Ray B. Westerfield, Secretary.

POLITICAL SCIENCE, ACADEMY OF. This society was organized in New York City in 1880 for the purpose of promoting social and political studies. The semi-annual meeting was held in New York on April 30, 1920, at which the subject was "Inflation and High Prices: Causes and Remedies." The discussion was carried on by many noted men, authorities on the subject. The situation in the United States was compared with that of Europe. The annual meeting (40th year) was held in New York on Dec. 9, 1920, at which the subject was "American Foreign Trade Relations." Both these meetings were attended by approximately 1200 persons. The report of the semi-annual meeting was published as Vol. 9, No. 1, of *The Proceedings* in January, 1920; about 5000 copies of this volume have been distributed. Volume 9 No. 2 of the *Proceedings* to be published in January, 1921, will be entitled *American Foreign Trade Relations*.

The present membership of the Academy is about 4300. The Academy publishes the *Political Science Quarterly*, the *Annual Record of Political Events*, and the *Proceedings* of each meeting. The officers in 1920 were: Board of Trustees, president, Samuel M. Lindsay; vice-presidents, Albert Shaw, Paul M. Warburg; secretary, Roswell C. McCrea; treasurer, George G. Plimpton; and editor of the *Quarterly*, Henry R. Massey. Headquarters are at Kent Hall, Columbia University, New York City.

POLITICAL SCIENCE. See LITERATURE, ENGLISH AND AMERICAN.

POLO. The national open polo championship of the United States was won in 1920 by the Meadowbrook Club which defeated the Coopers-town four in the final match by a score of 12 goals to 3. Meadowbrook also captured the senior national title by its 13 to 5 victory over Rockaway. The junior national honors went to the Foxhunters who defeated Byrn Mawr in the final round by a score of 9 to 5.

Arrangements were made during the year for international cup matches between the United States and England at Hurlingham, England, in June, 1921. The English players took the

trophy to their country in 1914 but owing to the war no attempt was made by the United States players to regain it.

POND, GEORGE GILBERT. Chemist, died at Hartford, Conn. He was born at Holliston, Mass., March 29, 1861; graduated at Amherst College, 1881; and studied at German universities. After teaching in the department of chemistry at Amherst he became professor of chemistry at Pennsylvania State College. He was dean of the School of Natural Science in that college from 1896 to the time of his death.

POOL. See BILLIARDS.

PORK. See LIVE STOCK.

PORTER, ELEANOR HODGMAN. Author, died, May 21. She was chiefly known as the author of *Pollyanna* stories. She was born at Littleton, N. H., Dec. 19, 1868, and studied under private teachers and at the New England Conservatory of Music. After 1901 she devoted herself to writing. Among her stories were: *Cross Currents* (1907); *The Turn of the Tide* (1908); *The Story of Marco* (1911); *Miss Billy* (1911); *Miss Billy's Decision* (1912); *Pollyanna* (1913); *Pollyanna Grows Up* (1915); *Dawn* (1919); *The Tie That Binds* (1919), etc.

PORTLAND CEMENT. According to estimates of the United States Geological Survey of the production, shipment, and gross value of Portland cement, 1920 was a record year. The production was estimated at 100,302,000 barrels, and the shipments at 96,329,000 barrels, valued at \$193,548,000 compared with 80,769,378 barrels manufactured and 85,596,616 barrels, valued at \$146,656,076, shipped in 1919, an increase of 24 per cent in production, 13 per cent in shipments, and 31.9 per cent in value of shipments in 1920. The stocks of finished cement increased from 5,852,497 barrels at the end of 1919 to about 8,290,000 barrels at the end of 1920, or more than 41 per cent. The average factory price in bulk at the mills for the whole country was \$2.01 a barrel in 1920, compared with \$1.71 in 1919, an increase of 17.5 per cent.

PORTLAND, ORE. See CITY PLANNING.

PORTO RICO. AREA AND POPULATION. The area of the island is placed at 3435 square miles. The population in 1920 was 1,297,772, an increase of 179,760 in less than 10 years and an increase of 344,579 since the census was taken by the American administration in 1899. At the last census under the Spanish government in 1887 the population was given at 798,565 and it increased during the last 22 years of Spanish government by 221,595, or 30 per cent. Under the 21 years of American government it increased 344,579 or 36 per cent. As a result of this increase the density of the population has become enormous, that is to say, 377.8 per square mile.

EDUCATION. The total enrollment for 1920 in the public schools was 184,991 as compared with 160,794 in 1919 and it was distributed as follows: Rural schools, 115,077; elementary urban schools, 59,174; secondary schools, 3,882; collegiate departments of the University of Porto Rico,

644. The rest were in special schools or night schools. The private school enrollment was 5823. The school population, that is to say persons from 5 to 18 years of age, was 452,446 or 35 per cent of the total population and the enrollment in the public schools was only 40.7 per cent of the school population. The number of teachers was 3288, as compared with 2984 in 1919; and all the teachers were native Porto Ricans, except 153. The number of buildings used for schools was 1903 of which 569 were owned by the government and built for the purpose. In 1919 the department of education undertook a complete enumeration of the children of school age in the rural districts. This gave the number of children of school age as 204,017; number of parents who could read and write, 25,044; parents who were illiterate, 59,502.

AGRICULTURE. Statistics indicate that out of the total area amounting to 2,072,068 acres about 500,000 acres are cultivated in any one year. This is due to the fact that a large portion of the surface is mountainous and unfit for cultivation and that the country is practically tropical and most of the ordinary cereals could not be raised. The Farm Loan Act was extended to Porto Rico in 1920. The following table shows the number of acres of cultivated and uncultivated land for three fiscal years:

	1916-17	1917-18	1918-19
Cane	205,106	258,431	238,901
Coffee	167,729	147,612	158,913
Tobacco	13,212	23,981	22,912
Pineapples	3,331	3,286	2,879
Oranges	5,196	5,843	6,122
Coconuts	6,832	9,887	9,152
Minor fruits	102,575	94,660	102,435
Pasture	1,062,097	1,001,919	1,014,741
Timber and brush	484,216	457,935	445,932
Marshlands	15,193	16,370	18,952
Other lands	32,928	46,308	51,129
Total	2,048,415	2,063,732	2,072,068

See AGRICULTURAL EXTENSION WORK.

COMMERCE. Over 90 per cent of the commerce is with the United States, the trade of the United States with Porto Rico exceeding that with any Latin American country, except Argentina, Brazil, Chile, and Cuba. The chief exports are sugar, tobacco, cigars, coffee, and fruits. The chief imports are rice, flour, cotton manufactures, manufactures of iron and steel, and fertilizers. In 1919-20 imports were valued at \$96,388,534 and exports at \$150,811,449, both showing a large increase over the preceding year, which was a record year. Breadstuffs of which almost all came from the United States, amounted to \$21,565,029 and the importation of cotton goods rose to \$18,021,275. The sugar exports to the United States amounted to \$14,018,912 short tons, valued at \$98,802,436. The United States took almost the entire sugar supply. Exports of unmanufactured tobacco amounted to 20,507,565 pounds, valued at \$13,416,388. The following tables show the development of external trade during 20 years, including the fiscal year, 1920:

MERCHANDISE SHIPPED FROM PORTO RICO TO THE UNITED STATES AND FOREIGN COUNTRIES

Years	To the United States	To foreign countries	Total	Years	To the United States	To foreign countries	Total
1901	\$5,581,288	\$3,002,679	\$8,583,967	1906	19,142,461	4,115,069	23,257,530
1902	8,378,766	4,055,190	12,433,956	1907	22,070,133	4,926,167	26,996,300
1903	11,051,195	4,037,884	15,089,079	1908	25,891,281	4,753,209	30,644,490
1904	11,792,826	4,543,077	16,265,903	1909	26,394,312	3,996,913	30,391,225
1905	15,633,145	3,076,420	18,709,565	1910	32,095,645	5,864,574	37,960,219

Years	To the United States	To foreign countries	Total	Years	To the United States	To foreign countries	Total
1911	\$34,765,409	\$5,152,958	\$39,918,367	1916	60,952,768	5,778,805	66,731,573
1912	42,873,401	6,832,012	49,705,413	1917	73,115,224	7,855,693	80,970,917
1913	40,538,623	8,564,942	49,103,565	1918	65,514,989	8,779,033	74,294,022
1914	34,423,180	8,670,582	43,102,762	1919	71,015,351	8,480,689	79,496,040
1915	42,311,920	7,044,987	49,356,907	1920	133,207,508	17,603,941	150,811,449

MERCHANDISE SHIPPED INTO PORTO RICO FROM THE UNITED STATES AND FOREIGN COUNTRIES

Years	From the United States	From foreign countries	Total	Years	From the United States	From foreign countries	Total
1901	\$6,965,408	\$1,952,728	\$8,918,136	1911	\$34,671,598	\$4,115,039	\$38,786,997
1902	10,882,653	2,326,957	13,209,610	1912	38,470,963	4,501,928	42,972,891
1903	12,245,845	2,203,441	14,449,286	1913	33,155,005	3,745,057	36,900,062
1904	11,210,069	1,958,960	13,169,029	1914	32,568,368	3,838,419	36,406,787
1905	13,974,070	2,562,189	16,536,259	1915	30,929,831	2,954,465	33,884,296
1906	19,224,881	2,602,784	21,827,665	1916	35,892,515	3,058,641	38,951,156
1907	25,686,285	3,580,887	29,267,172	1917	49,539,249	4,005,975	53,545,224
1908	22,677,376	3,148,289	25,825,665	1918	58,945,758	4,443,524	63,389,282
1909	23,618,545	2,925,781	26,544,326	1919	57,898,085	4,502,275	62,400,360
1910	27,097,654	3,537,201	30,634,855	1920	90,724,259	5,664,275	96,388,534

HEALTH AND SANITATION. During the year much attention was given to tuberculosis, malaria, and uncinariasis, the three diseases along with infant mortality which accounted for 60 per cent of the death rate. This was due largely to the visit of the commission from the Rockefeller Foundation which studied health conditions with the coöperation of the local sanitary office. Their investigation tended to confirm the opinion that about 90 per cent of the people were infected with uncinariasis. A campaign was started with the aid of the Rockefeller Foundation funds against this disease and the other two above mentioned. Two hospitals were established for the regions afflicted with malaria and two for uncinariasis. A number of dispensaries were also opened. Infant mortality was found to be 43.09 per cent of the total mortality and this was the lowest figure in 10 years. The death rate for the fiscal year ending June 30, 1920, was 23.33 per cent per thousand. Total deaths were 30,280; total births, 50,729.

FINANCE. The income of the insular treasury, estimated for the fiscal year 1920-21, was \$9,015,000 and the total assets for the year including cash on hand amounted to \$10,203,405 which, estimating the total liabilities at \$9,797,319, would leave an estimated cash balance. June 30, 1921, of \$306,086. The total bonded indebtedness was increased during the year by the sale of \$1,000,000 of public improvement bonds of 1919, making a total bonded indebtedness at the close of the fiscal year of \$10,264,000. The limit of indebtedness under the Jones act (the organic act) on the basis of assessed valuation in 1919-20, was \$18,486,000.

ECONOMIC CONDITIONS. The year was a prosperous one, but in the early part there were several serious strikes among the workers in the sugar cane fields. The strike broke out in January and lasted until April 20th, involving nearly the whole island and in the course of it cane fields were set on fire and other disorders occurred. It was settled as the result of negotiations carried on early in March. There was also a strike of the stevedores in San Juan and other cities which began in May and lasted for several weeks. Of these two strikes the first resulted in a substantial increase in wages and the second failed to obtain the demands of the workingmen. All industries and every form of business with a possible exception of the citrus fruit growers were

in a prosperous condition and the laboring class benefited from the great increase of wages.

LEGISLATION. The Legislature met April 26, 1920, in special session and adjourned May 6 after passing 19 acts and six joint resolutions. The following were the chief measures according to the governor's report: The excise laws, the municipal law, the election law, and workingmen's compensation law were all amended in several important particulars. In addition an act was passed authorizing the incorporation of co-operative societies of production and consumption as well as a law increasing the salaries of all the employees and officers of the insular government. The appropriation for the maintenance of the police force was also increased, in order to meet the exigencies of the situation caused by the widespread strike in the cane fields.

There was also enacted a law to aid in the development of the project of a new workingmen's barrio for the city of San Juan. The plan for such a barrio has long been in process of development, but its final execution was made more urgent by the imminence of the actual beginning of the dredging operations which would immediately force the removal of a large part of the laborers from the congested district of Puerto de Tierra.

OFFICERS. Governor, Arthur Yager; Executive Secretary, Roman Siaca Pacheco; Treasurer, José E. Benedicto; Auditor, J. M. Bonner; Attorney-General, Salvadore Meatre; Commissioner of Education, Paul G. Miller; Commissioner of the Interior, Guillermo Esteves; Commissioner of Agriculture and Labor, Romon Gandin Cordova; and Commissioner of Health, Alejandro Ruis Soler.

PORTS. See DOCKS AND HARBORS.

PORTUGAL. A republic occupying the western part of the Iberian peninsula; the most westerly of states on the Continent of Europe. Capital, Lisbon.

AREA AND POPULATION. Area, 35,490 square miles; population (1911), 5,957,985, giving a density of 152.8 per square mile. The largest cities are Lisbon (435,359 in 1911) and Oporto (194,009 in 1911). For details see 1917 and preceding YEAR BOOKS.

PRODUCTION. Of the total area, 26.2 per cent is cultivated; forest land is placed at 17.3 per cent and waste land at 43.1 per cent. The chief products are corn, wheat, rye, oats, barley, beans, and potatoes, and other vegetables; wine, olive

oil, and fruits. Live stock includes oxen, pigs, sheep, and goats. In the north, the land is parceled out in small holdings and agriculture is retarded by the high price of modern machinery. In the south, large farms prevail and agricultural machinery including the tractor is employed. In 1919 wheat production was placed at 4,767,665 bushels as compared with 6,051,000 bushels in 1918; rye, 1,785,838 bushels; oats, 3,037,831 bushels; barley, 1,009,780 bushels. The following information in regard to wine production was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: The quantity of wine produced during the past four years was as follows: 1916, 381,301,333 litres (1 litre = 0.264 gallon); 1917, 300,246,158 litres; 1918, 258,731,378 litres; 1919, 439,278,000 litres. The various qualities produced in 1919 were: Sweet wines, 109,126,000 litres; table wines, 205,886,000 litres; green wines, 103,510,000 litres; liquors, 20,756,000 litres. Owing to the excellent prices and the demand for wine for export thousands of new vines were planted, although labor was paid 9 to 10 times as much as in 1913. See AGRICULTURE.

COMMERCE, ETC. In 1919 there was a slight increase in exports while the value of imports more than doubled. This was due to the falling off in productive capacity and to the need of foreign articles to replace stocks depleted during the war. The eight-hour day law recently passed was also believed to have tended to reduce agricultural production. Overseas trade was as follows for 1918 and 1919: Exports (1918), 76,199,000 escudos; and imports, 90,152,000 escudos; exports (1919), 110,554,000 escudos; and imports 231,603,000 escudos—the escudo at par having a value of \$1.08, but varying widely during this period. The United States during 1919 held its advantage as a source of supply, and its trade with Portugal maintained itself in a satisfactory manner. Interest in promoting further development of the commerce between the two countries was shown by the unusual number of American salesmen who came to Lisbon during the year. More investigations were made of this market in 1919 than during any previous year. One interesting feature of the increased trade activity between the two countries was that American ships were carrying a large percentage of the shipments to Portugal. During 1919, 1302 steamers and 372 sailing vessels called at Lisbon, of which 43 steamers and 39 sailing vessels carried the American flag. Ships of some of the other nationalities were as follows:

Nationality	Steamers	Sailing vessels
Portuguese	249	135
British	372	67
Dutch	156	12
French	79	156
Norwegian	142	...
Swedish	37	7
Spanish	52	29
Brazilian	29	2
Belgian	32	...

During the year the proposal for the construction of an electric railway from Sintra to Estoril, Vascaes, and Boca to Inferno by the Companhia Sintra-Atlantico of Lisbon went forward so that bids for track laying and operation for a 75 year term could be called for.

FINANCE. The following table showing the

budget estimates for 1920 is taken from the *Statesman's Year Book* for 1920:

Revenue		Escudos
Direct taxes	.....	15,618,025
Registration and stamps	.....	17,550,000
Indirect taxes	.....	26,447,250
National property	.....	730,494
Revenue earning, administration, etc.	.....	39,700,249
Total	.....	100,046,018
Extraordinary	.....	13,351,340
Grand total	.....	113,397,858 (25,199,413 l.)
Expenditure		Escudos
Public debt	.....	48,853,066
Presidency, Congress	.....	2,805,345
Ministry of Finance	.....	10,105,755
Ministry of Interior	.....	19,208,419
Ministry of Justice	.....	1,757,836
Ministry of War	.....	39,008,846
Ministry of Marine	.....	12,803,803
Ministry of Foreign Affairs	.....	1,358,663
Ministry of Commerce	.....	8,292,404
Ministry of Colonies	.....	923,153
Ministry of Instruction	.....	8,133,595
Ministry of Labor	.....	1,449,766
Ministry of Agriculture	.....	2,019,693
Ministry of Food	.....	3,266,951
Total	.....	154,982,297
Extraordinary	.....	40,438,423
Grand total	.....	195,420,717 (43,425,604 l.)

GOVERNMENT. Portugal became a republic after the overthrow of the monarchy in 1910. On August 20th of the following year a new constitution was adopted. Executive power is in the President, elected by the Congress, and legislative power in the Congress consisting of two chambers, the upper chamber having 71 members elected by the municipal councils and the lower chamber or National Council, 164 members, elected by direct suffrage for three years. The President in 1920 was Dr. Antonio José de Almeida and the ministry in 1920 was constituted as follows: Prime Minister and Interior, Senhor Liberato Pinto; Instruction, Senhor Augusto Nobre; Colonies, Senhor Gomes; Labor, Senhor Domingues Dos Santos; War, Senhor Alvaro De Castro; Justice, Senhor Lopez Cardoso; Commerce, Senhor Antonio Fonseca; Foreign, Senhor Dominos Pereira; Marine, Senhor Julio Martins; Finance, Senhor Cunha Leal; and Agriculture, Senhor John Goncalves.

HISTORY. A new Liberal ministry came into power on the resignation of the Cardoso cabinet, June 6. But the Prime Minister, Fernandes Costa, and his fellow members lost the support of Parliament soon afterwards and a coalition cabinet was formed under Domingos Pereira, which in turn was promptly overthrown on account of the railway strike. The government having failed to meet the demand of the railwaymen's association, the latter declared a general strike. The government resigned March 6th and a new ministry was organized under Colonel Baptista on a platform of the restoration of order and reduction of the cost of living. The Prime Minister died June 6th and was succeeded by Ramos Petro who had been Minister of Justice. Portugal ratified the Peace Treaty on April 1st.

After the expulsion of King Manoel II, he fled to England, Oct. 5, 1910. When the Republic was established, he expressed sympathy several times with the republican form of government, but did not formally renounce the throne. During the past 10 years counter-revolutions in his name had greatly disturbed the new republic.

In many cases he repudiated these movements. In 1920 he took a definite step toward putting an end to the disturbing efforts made on his behalf by definitely renouncing the throne (September 9th) in favor of his son, Prince Duarte. Soon afterwards, in a letter to his representative in Portugal, he said that the middle class ought to unite for the purpose of saving the country from anarchy and he urged the necessity of pardoning all political prisoners. See NAVAL PROGRESS.

PORTUGUESE EAST AFRICA. A Portuguese colony on the east coast of Africa with an area of 428,532 square miles, comprising three parts, namely: (1) the Province of Mozambique (295,000 square miles); (2) the territory under the Mozambique Company (59,840 square miles); (3) the district under the Nyassa Company (73,292 square miles). Total population is estimated at 3,000,000 natives, 10,500 whites and 1100 Asiatics and half-castes. The capital and chief port is Lourenço Marques with a population in 1912 of 13,154. Other ports are Beira (8821); Mozambique (5000); Ibo (5000-6000); Porto Amelia (5000); Quilimane, and Chinde. The chief products are sugar, cocoanuts, rubber, beeswax, and minerals. Imports in 1917, 12,730,496 escudos; exports, 6,704,889 escudos; re-exports, 9,595,121 escudos; transit, 27,486,929 escudos. The following information in respect to the trade of 1918 for the Province of Mozambique was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: For the year 1918 the total trade of the Province of Mozambique was shown as 57,800,000 escudos in round numbers—an increase of 1,300,000 escudos over 1917. Of the imports into the Province 815,000 escudos came from the United States, a falling off of 219,000 escudos from the 1917 total. This is accounted for, however, by the fact that during 1917 railway material for the Quilimane Railway was imported to the extent of 234,453 escudos against only 40,000 escudos in 1918. The transit trade from the United States also fell from 8,450,000 escudos in 1917 to 5,188,000 escudos in 1918. This is largely due to the fact that many of the steamers leaving American ports for South Africa, loaded cargo for ports as far as Durban only. The trade of Portugal and possessions with this colony for 1918 was 13,986,000 escudos, against 12,290,000 escudos for 1917, of which 1,216,400 escudos was transit trade, against 883,000 escudos in 1917. The trade of Great Britain and possessions was 31,950,000 escudos (17,990,000 escudos transit), as compared with 28,122,000 escudos (15,301,000 escudos transit), for 1917. Owing to currency fluctuations the above values are given in Portuguese money, the escudo, which in normal times is equal to \$1.08. The value during 1918, however, varied from \$0.57 to \$0.60. A British authority gave exports from the colony to the United Kingdom in 1919 at £1,579,990, and imports from the United Kingdom at £1,279,837.

An account of the recent railway activity in the region of Beira was given in the preceding YEAR BOOK. Consular reports in 1920 supplied the following information in regard to railway conditions in the Province of Mozambique: Following the announcement that the government would receive offers for the building of railways apart from government construction, a company formed in the Transvaal, called the Railway Construction Company, laid proposals before the

government for the building of a railway from the port of Lourenço Marques to the interior. Other railways were also being considered. A survey for a branch line was being made from a point on the main line of the railway between Lourenço Marques and the Transvaal to connect with Namahacha, a town in the mountains destined to be the future summer residential place and health resort of Lourenço Marques.

The revenue in 1917-18 was \$10,195,918.

In 1918, 37,496 natives were recruited for work in the mines of the Transvaal as compared with 41,483 in the preceding year. Recently a strong agitation against recruiting the natives for work outside the province had developed owing to the great shortage of labor for agricultural and industrial purposes within the province and a demand was made that the treaty which admitted this recruiting should be abrogated. It had been formed between the province and Transvaal before the latter joined the Union of South Africa.

Under the treaty of Versailles, Portugal was acknowledged Sept. 23, 1919, as the rightful owner of the territory south of the Rovuma known as the "Kionga Triangle" which had formerly been a part of the German East Africa. In 1920 there were frequent reports of a design on the part of the Union of South Africa to annex the colony and the subject was the cause of repeated discussions and great anxiety in Portugal.

PORTUGUESE GUINEA. A Portuguese colony on the western coast of Africa, including the archipelago of Bijagaz along with the island of Bolama. Capital, Bolama. Area, 13,940 square miles; according to other estimates about 25,000 square miles. Population variously estimated, from 289,000 to 1,000,000. Estimated revenues for 1917-18, 723,418 escudos; expenditure, 708,700 escudos.

POST, AERIAL. See AERONAUTICS.

POSTAL UNION. The International Postal Union Congress met at Madrid in Spain in the first week in October. There was a division as to the principle of rate increase between the respective representatives of the east and west. North American and South American representatives wished to fix their own rate, and this was accepted on the condition that the rate did not exceed the maximum to be fixed by the Postal Union. Plans for a new organization were formed, namely, a Pan-American Postal Federation, which was to begin its meetings after the next congress of the Postal Union should hold its session at Buenos Aires in Aug. 21, 1921. The Postal Union at its meeting also agreed upon the establishment of International payments for the transit of mails on the basis of the gold dollar and upon allowing only parent countries to vote in future congresses, the colonists to send delegates, but not to vote.

POST OFFICE. See UNITED STATES.

POTASH. According to the United States Geological Survey the quantity of potash produced in 1919 fell far short of the production in 1918 and hardly equaled that of 1917, as is shown by the table opposite.

California produced 41.5 per cent of the output in 1919; Nebraska, 29.2 per cent; Utah, 16.3 per cent; and other States, 13 per cent.

A comparatively small quantity of potash ma-

DOMESTIC POTASH PRODUCED AND SOLD IN THE UNITED STATES IN 1915-1919

Year	Number of plants	Crude potash (short tons)	PRODUCTION		SALES		Value
			Available content of potash (K ₂ O) (short tons)	Crude potash (short tons)	Available content of potash (K ₂ O) (short tons)	Crude potash (short tons)	
1915	5	4,374	1,090	4,874	1,090	4,874	\$342,000
1916	70	35,739	9,720	25,739	9,720	25,739	4,242,730
1917	95	128,961	32,578	128,961	32,578	128,961	13,980,577
1918	128	207,686	54,803	140,343	38,580	101,763	15,839,618
1919 ^a	77	110,243	30,845	173,786	46,732	127,054	11,370,445

^a Production for 1919 includes a quantity of material either utilized by producer or reported as not marketed; sales for 1919 include material produced in 1918 but sold in 1919.

terials, including refined potassium salts, is exported from the United States, and data concerning these exports were meagre. As to the imports, prior to 1913 the United States imported annually more than 250,000 tons of potash (K₂O) from Germany. This source of supply was cut off entirely during the recent war, and imports declined to less than 8000 tons annually. France gained control of the Alsatian potash mines and shipped some potash to the United States in 1919, but not nearly as much as had been anticipated, because of the condition of the mines and of difficulties in transportation and labor. In July the War Trade Board removed restrictions on the importation of German potash, and in September it began to come into this country. But the imports from Germany were small, as stocks were low, especially muriate, transportation facilities were inadequate, labor was unreliable, and the coal situation was unfavorable.

The potash produced in the United States during the first three months of 1920, as reported to the Geological Survey from 43 plants, amounted to 42,008 short tons of crude material containing 11,969 short tons of available potash (K₂O), valued at \$2,738,195. Alunite was used in 1920 only in experiments made by companies that reported production of potash from this material in 1919.

The following table shows the production of potash in the first three months of 1920:

POTASH PRODUCED IN THE UNITED STATES THE FIRST THREE MONTHS OF 1920, CLASSIFIED ACCORDING TO SOURCE

Source	Number of producers	Production of crude salts (short tons)	Available potash (K ₂ O) (short tons)	Percentage of total	Total value	Percentage of K ₂ O in crude product
Natural brines:						
Nebraska lakes	7	23,337	5,859	49.0	\$1,280,819	22-28
Other brines	5	9,726	4,104	34.3	936,161	15.8-56
	12	33,063	9,963	83.3	2,216,980	.....
Alunite, blast-furnace dust, and silicate rock	3	1,336	565	4.7	174,912	9.8-52
Dust from cement plants	7	4,015	314	2.6	44,246	2.3-35
Wood ashes	14	108	65	.5	36,671	60
Steffens waste water	3	1,870	440	3.7	118,666	12-42
Kelp and molasses distillery waste ..	4	1,616	622	5.2	146,720	26-51
	43	42,008	11,969	100	2,788,195	.....

Formerly Germany produced almost the entire world's supply of potash, about 95 per cent of the output coming from the mines at Stassfurt and about 5 per cent from the mines in Alsace. Practically normal production (about 1,000,000 metric tons of (K₂O) was maintained by Germany throughout the war, and, according to figures by Edwards, the total production of actual potash in 1919 from the mines at Stassfurt was 946,000 short tons, or 858,439 metric tons (K₂O). The output from the Alsatian mines in 1919 was 96,546 tons (probably metric).

The combined output from Germany and France was therefore 954,985 metric tons. The combined output from the German and Alsatian mines during recent years is shown in the following table:

POTASH (K₂O) PRODUCED BY THE GERMAN AND ALSATIAN MINES, 1880-1919

	Metric tons		Metric tons
1914	903,988	1880	68,550
1915	679,776	1890	122,302
1916	883,976	1900	803,610
1917	1,004,281	1910	857,888
1918	1,003,000	1911	939,927
1919	954,985	1913	1,110,369

The separation of Alsace from Germany broke the monopoly in the potash industry which Germany had theretofore held.

POTASH AS FERTILIZER. See FERTILIZERS.

POTATOES. Data regarding the world's potato production in 1920, as has been general in recent years, were very incomplete. The International Institute of Agriculture, Rome, published estimates showing that the 1919 yield in the northern hemisphere, together with the 1919-20 yield of the southern hemisphere, amounted to 3,159,633,000 bushels as compared with 2,653,161,000 bushels for the corresponding preceding seasons. The 1920 production was reported as increased over the yield of 1919 in Spain, England and Wales, Switzerland, Finland,

Italy, and the United States, and production above the average in Spain, Finland, Switzerland, Canada, the United States, and Japan. The yields of a number of countries were provisionally estimated as follows: Prussia 727,520,000, Belgium 55,318,000, Spain 91,501,000, England and Wales 112,610,000, Hungary 69,341,000, Italy 49,840,000, Netherlands 88,462,000, Sweden 58,352,000, and Japan 45,807,000 bushels. According to the Dominion Bureau of Statistics the potato harvest of Canada for 1920 was represented by 138,527,000 bushels from an area of

784,544 acres, as compared with 125,574,100 bushels from 818,767 acres in 1919. The average yield per acre was about 176.5 bushels while in 1919 only about 153.5 bushels were secured.

Estimates published by the Department of Agriculture place the potato production of the United States in 1920 at 430,458,000 bushels as against 357,542,000 bushels in 1919 and an average of 382,113,000 bushels for the five years 1914-1918. The area in potatoes was given as 3,929,000 acres or 52,000 acres less than the year before and 9000 acres under the average acreage for the five years 1914-1918. The average yield per acre was 109.6 bushels while in the preceding year it was 89.8 bushels, and for the 5-year period 97 bushels. The average farm value on Dec. 1, 1920, was \$1.164 per bushel, a decrease of 44.4 cents compared with 1919 and an increase of 18.3 cents over the 5-year average. On this basis the crop of 1920 represented a total value of \$500,974,000 or over \$73,000,000 less than the total value of the 1919 crop, but still \$125,957,000 above the average total value for the five years 1914-1918. During February and March the retail price of potatoes reached as high as \$6.50 per 100-pound sack in some of the larger eastern markets of the United States.

Owing to the small crop of 1919 the importation of potatoes into the United States was quite large. Imports from Canada in 1919 up to November 18 amounted to 1841 car loads while during the same period in 1918 only 13 car loads had been shipped in. Potatoes were imported also from Denmark during the year, but some of the shipments were refused entry on account of infection with scab and rot. A larger supply of certified seed potatoes was produced in the United States in 1920 than ever before. It was estimated that 220,000 bushels of such seed would be available in Maine and New York for shipment to other States. Michigan produced its first certified seed potatoes in 1920 and Canada produced 100 per cent over any other year of field inspected seed tubers.

POTTERY PRODUCTS. According to the United States Geological Survey, the value of the pottery products of the United States in 1919 was about \$76,140,000, an increase of \$12,228,000 over that in 1918. The total increase in 1919 over 1917 was \$19,997,000, or 36 per cent, and over 1913, \$38,148,000, or 100 per cent. Every kind of pottery increased in value in 1919 except chemical stoneware and chemical porcelain. White ware (household wares except china) valued at \$29,700,000, showed the largest increase, \$4,394,000; sanitary ware, valued at \$14,480,000, increased \$3,239,000; china, valued at \$7,625,000, increased \$1,318,000; porcelain electrical supplies, valued at \$12,190,000, increased \$995,000; and red earthenware, whose output in 1918 was affected indirectly by curtailment of fuel, recovered in 1919 and was valued at \$1,160,000, an increase of \$253,000. The value of white ware and china, which comprise the general household wares and constituted 49 per cent of all pottery products in 1919, was \$37,325,000, an increase of \$5,712,000, or 18 per cent, over 1918. If to this sum is added the value of sanitary ware and porcelain electrical supplies, which formed 84 per cent of the output in 1919, the total value was \$63,995,000, or \$9,947,000 more than in 1918. The production of chemical stoneware, which was used largely in the manufacture of munitions in 1918, naturally fell off

with the cessation of hostilities, so that the production in 1919 was valued at \$645,000, a decrease of \$903,000. The decrease in chemical porcelain, valued at \$180,000, was \$42,000, and may possibly be ascribed to the same cause.

POWELL, MAUD. American violinist, died at Uniontown, Pa., January 8. She was born at Peru, Ill., Aug. 22, 1868, studied first in Chicago and later at the Leipzig Conservatory in Paris and Berlin. She made her first appearance in Berlin in 1885 with marked success and returning soon after to the United States immediately received recognition. She was soloist for the orchestras of Thomas, Seidl, Nikisch, Damrosch, and others and besides many tours in the United States, she made long tours in Europe and South Africa. She was remarkable for the introduction of novelties in her programmes. She married Mr. H. G. Turner in 1904.

POWER PLANTS. See STEAM ENGINE; STEAM TURBINE.

PRAIRIE PROVINCES. The name applied to the three Canadian provinces of Manitoba, Saskatchewan, and Alberta, separated from the United States on the south by the 49th parallel of latitude. Area, estimated at 758,817 square miles; population according to the census for June 1, 1916, 1,698,220.

PRATT, DAVID S. Chemist, died at St. Louis, Mo., January 28. He was born at Towanda, Pa., Sept. 20, 1885; studied at Cornell University and was appointed fellow in chemistry there, but subsequently joined the staff of the Bureau of Chemists at Washington. He spent three years in chemical research in the Philippines. In 1914 he became professor of chemistry in the University of Pittsburgh and in 1917 was made assistant director of the Mellon Institute of Industrial Research from which position he resigned on Jan. 1, 1920, in order to practice as consulting chemist at St. Louis. He was chiefly known for his published studies on phthalic acid derivatives and was reputed to have a profound knowledge of pure organic chemistry.

PRATT INSTITUTE. A non-sectarian, co-educational institution of the higher learning at Brooklyn, N. Y., founded in 1887. The enrollment for the fall of 1920 was 3305. There were 131 members in the faculty, including directors. The library contained 123,696 volumes. President, Frederic B. Pratt.

PRENDERGAST, JAMES M. Broker, died at Boston, Mass., November 29. He was well known as an originator of the Boston park system, whose model was followed largely in other cities. He was born at Boston, Oct. 29, 1851, and became prominent in the financial enterprises of the city, holding important executive and financial offices in the Boston Elevated Railway Company and banking and various industrial companies. In politics he was a Republican.

PRESBYTERIAN CHURCH. United under the Presbyterian Alliance there are 11 denominations, besides a few small independent churches. In 1920 statistics show there were 2,896,803 communicants in the Alliance, while it was estimated that there were over 5,000,000 adherents. These figures show an increase over the figures for 1919. World figures show about 35,000,000 adherents to the denomination, besides 5,000,000 Reformed Lutherans.

The largest branch of the denomination is the Presbyterian Church in the United States of America. The following statistics are for 1920:

40 synods, 288 presbyteries, 9924 ministers, 44,025 elders, 17,178 deacons, 9769 churches, 1,637,105 communicants, 1,351,260 Sunday school scholars, \$3,228,089 contributed for home missions, \$3,516,884 for foreign missions, \$1,069,360 for educational work, \$25,760,382 for congregational work, and with contributions for other evangelistic and relief work, making a total of contributions for year of \$43,071,072. Although the number of churches was decreased during the year, the number of communicants increased slightly, and the contributions increased greatly. The denomination is connected with 57 educational institutions which had during the year 25,647 scholars, 1705 professors and teachers, total assets, \$45,866,555; income, \$4,641,538. Home missionary work is carried on in Alaska, Porto Rico, Cuba, and in the United States among the Indians, Mexicans, Mormons, and mountaineers. Besides the Board of Missions of the church, there is the Woman's Board of Home Missions, which in 1920 had 5433 women's missionary societies and 7149 young people's and children's organizations with a total membership of 359,243. The Board of Foreign Missions maintains 26 missions, 166 stations, 1428 missionaries, 6856 native helpers, 1027 fully organized churches, 178,299 communicants, 2034 schools, 78,733 pupils, 232,321 pupils in Sunday schools, 175 hospitals and dispensaries, 350,284 patients treated annually, 100,669,579 pages of Christian literature printed in over 20 languages. There is also a Woman's Board of Foreign Missions. The denomination maintains 12 theological seminaries scattered all over the United States. The 132nd General Assembly of the denomination was held in May, 1920, at which time the union with the former Welsh Presbyterian Church was made complete. This denomination had in May, 1920, six synods, 17 presbyteries, 72 ministers, 14 licentiates, 119 churches, 14,668 communicants, 127 Sunday schools, and 11,062 Sunday school pupils.

The Presbyterian Church in the United States is a separate denomination which had 376,517 communicants in 1920, a slight increase over 1919. This denomination is sometimes called the Southern Presbyterian Church as most of its churches are in that part of the country. The United Presbyterian Church of North America had 203,910 communicants in 1920. Independent churches had about 50,000 communicants. Besides these denominations there are six reformed Presbyterian churches, statistics for which will be found under REFORMED PRESBYTERIAN CHURCHES. Statistics for the Cumberland Presbyterian Church will be found under that heading.

There are two branches of the denomination in Canada, the largest of which is the Presbyterian Church of Canada, which had 343,185 communicants in 1920. The Church of Scotland in Canada had about 10,000, while total adherents for both churches numbered about 600,000.

The Presbyterian Church of England had 85,551 communicants, the Church of Scotland in England had about 4000 communicants, while adherents to both churches numbered about 200,000. The Calvinistic Methodist or Presbyterian Church of Wales had about 200,000 communicants with 400,000 adherents. The Presbyterian Church in Ireland had 104,033 communicants, the Reformed Presbyterian Church in Ireland had 4000 communicants, other churches in that

country had 2000 communicants, while adherents numbered about 200,000. The Church of Scotland had 722,750 communicants, the United Free Church of Scotland had 523,808, the Free Church of Scotland had about 10,000, other churches in that country had about 10,000, while adherents to all numbered about 2,000,000. The following figures are approximately correct for 1920: Bohemia and Moravia, 300,000 adherents; France, 1,000,000; Germany, 5,000,000 (the Reformed who entered into union with the Lutheran Church number at least 5,000,000); Holland, 2,500,000; Hungary, 3,000,000; Italy, 250,000; Switzerland, 1,700,000; other European countries, 500,000; Africa, 1,000,000; Asia, 600,000; Australasia, 900,000; South America, 100,000. See also RELIGIOUS DENOMINATIONS.

PRESCOTT, JOHN EUSTACE. British prelate, died February 17. After 1883 he was archdeacon and canon of Carlisle, and after 1900, chancellor of the diocese of Carlisle. He was born at Wakefield; graduated with honors at Cambridge; and was ordained in 1858. He wrote, *Christian Hymns and Hymn Writers*; and works on local church history.

PRICE, WILLIAM THOMPSON. Author, died, May 3. He was born in Jefferson County, Conn., Dec. 17, 1846; was educated in the private schools of that State and in the German universities; joined the Confederate army in his youth and was captured and imprisoned at Rock Island, Ill., but escaped. He was dramatic critic on the *Courier-Journal*, Louisville, Ky., 1875 to 1880, and was for a long time play-reader for A. M. Palmer and for Harrison Grey Fiske. He founded and became the director of the American School of Play-writing in 1901, and founded the *American Playwright Monthly Magazine*. He wrote the *Technique of the Drama* (1892) and *Analysis of Play Construction and Dramatic Principle* (1908).

PRICES. An analysis of the rise and fall of living costs after 1914, made by the Department of Labor, placed the increase to a "standard family" in New York City during the period from June 1, 1914, to Dec. 31, 1920, at 101.4 per cent.

"The high-water mark was reached in June, 1920, when the living costs of a family in New York were 119.2 per cent above the costs on June 1, 1914. A continuing increase in living costs in almost every necessity of life was shown from June 1, 1914, until June, 1920. The break came during the summer and fall of 1920. Figures include cost of food, taken as representing 42 per cent of essential expenditure of the family; clothing, 16.6 per cent of expenditure; housing, 14.3 per cent; fuel and light, 4.3 per cent; furniture and furnishings, 3.3 per cent, and miscellaneous, 18.7 per cent. Prices of clothing showed the heaviest increases since 1914, and furniture and furnishings were next in line. Housing, fuel and light, and expenses listed as "miscellaneous" were the only ones which failed to show a decrease during the period from June to December, 1920. Housing showed an increase during this period of 5.7 per cent, and fuel and light 26.4 per cent. The analysis covers living costs in thirty-two cities. Detroit heads the list in living cost increases. The increase from December 31, 1914, to June 20, 1920, for that city is given as 136 per cent. On December 31 living costs had dropped to 118.6 per cent above the 1914 level. Portland, Ore., and San Francisco showed the smallest increases. Prices in San Francisco jumped 96 per cent between December, 1914, and June, 1920, and then fell off by December, 1920, to 85.3 per cent above the 1914 level. In Portland prices increased 100.4 per cent up to June, 1920, and then dropped back to 80.3 per cent from the 1914 level."

At the end of May the price index number of the Federal Reserve Board stood at about 273 and on December 17 it was reported at 212. These were highest and lowest points respec-

tively for the period following the entry of the United States in 1917. The highest, lowest, and closing of leading commodities in the year 1920 are shown in the following table prepared by the *Journal of Commerce*:

	High	Low	Close
Wheat, No. 1 Northern...bu.	\$3.04	\$1.81	\$1.98½
Wheat, No. 2 Northern...bu.	8.01	1.72	1.96½
Flour, Spring Patents...sack	15.00	8.25	9.25
Flour, Winter Straights...sack	13.50	8.50	8.75
Corn, No. 2 Yellow...bu.	2.32½	0.95½	0.97½
Oats, No. 3 White...bu.	1.48	0.59	0.59
Hay, No. 1 Timothy...ton	70.00	36.00	38.00
Straw, Long Rye...ton	37.00	18.00	22.00
Butter, Creamery Extras...lb.	0.77	0.51½	0.56
Cheese, Aver. Fancy, fresh...lb.	0.31½	0.22	0.22½
Eggs, Western Aver. Best...doz.	0.81½	0.41½	0.75
Tallow, Special Loose...lb.	0.18	0.06½	0.06½
Sugar, Raw Cent., 96 deg.			
100 lbs.	23.57	4.63	5.89
Sugar, Refined Granulated			
100 lbs.	22.00	7.90	7.90
Coffee, Rio No. 7...lb.	0.16½	0.06½	0.06½
Rice, Domestic...lb.	0.13½	0.06½	0.06½
Wool, XX Ohio...lb.	0.78	0.47	0.47
Wool, Staple Ter. fine...lb.	2.10	0.95	0.95
Cotton, Middling Upland			
100 lbs.	43.75	14.50	14.50

The popular impression that the drop in prices toward the close of the year was peculiar to the United States or more pronounced in this country than elsewhere had no foundation. In Great Britain, France, Italy, and Australia the index numbers followed about the same general course. (See GREAT BRITAIN, section on *Cost of Living*). The following table shows the wholesale price indexes for these countries together with Sweden, Canada, India and Japan:

WHOLESALE PRICE INDEXES (Average prices, 1913=100)			
	Jan., 1920	Apr., 1920	Oct., 1920
United States.....	242	263	208
United Kingdom....	288	313	282
France	487	584	503
Italy	504	679	665
Sweden	319	354	346
Canada	248	261	284
Japan	301	800	226
India	218	200	206
Australia	203	217	...

See AGRICULTURE; FINANCIAL REVIEW; and articles on the various industries, manufactures, and minerals.

PRIHODA, VASA. See MUSIC, Artists, Instrumentalists.

PRIMITIVE METHODIST CHURCH. See METHODISTS, WESLEYAN.

PRINCE EDWARD ISLAND. One of the Canadian Maritime Provinces; the smallest province in the dominion; situated at mouth of the Gulf of St. Lawrence, and separated from the mainland by the Northumberland strait. Area, 2184 square miles; population (1911), 93,728. The capital and largest town is Charlottetown, with a population (1911) of 11,203. It is under a lieutenant-governor and legislative assembly of 30 members elected for four years, one-half on a suffrage based on property and one-half on manhood suffrage. At the beginning of 1920 the members of the legislative assembly were distributed by political parties as follows: Liberals, 26; Conservatives, 4. Lieutenant-governor at the beginning of 1920, Murdock McKinnon.

PRINCETON UNIVERSITY. A non-sectarian institution for the higher education of men

at Princeton, N. J., founded in 1746. The number of undergraduate students for the regular term of 1920 was 1814; of graduate students, 153. There were 213 members in the faculty. The income for the year, including fees, rents and gifts amounted to \$1,056,490. There were 444,268 volumes in the library. President, John Grier Hibben.

PRIVATE BANKS. See STATE BANKS.

PROCTOR, THOMAS REDFIELD. Banker, died July 4. He was born at Proctorsville, Vt., May 25, 1844, and served in the navy during the Civil War. He afterwards was engaged in banking in Utica, N. Y., and became director or official in many of the leading financial institutions of that city. He was a prominent member of numerous important patriotic, historical, art, and social organizations.

PROPORTIONAL REPRESENTATION.

See MUNICIPAL GOVERNMENT.

PROTESTANT EPISCOPAL CHURCH.

At the time of the American Revolution the Church of England was firmly established in the Colonies, and after the separation from England, a large number of members returned to their mother country. The others, however, after much difficulty, organized the Protestant Episcopal Church in this country, which is now one of the largest single bodies in the United States. The doctrines of the church are the same as those of the Church of England in all important principles. In 1873 a few churches separated from the main body to form the Reformed Episcopal Church which is less ritualistic in its ceremonies, but otherwise very similar. See REFORMED EPISCOPAL CHURCH.

Figures for the Protestant Episcopal Church for 1919 show 1,085,068 communicants, a decrease of about 7000 from 1916. At the beginning of 1920 there were 1,077,042 communicants. This decrease is probably due to the war, as there was a 23 per cent increase from 1906 to 1916. Churches numbered 8190 and there were 5783 ministers. At the General Convention in 1920 a new canon was adopted providing for the organization of the Presiding Bishop and Council. It was declared that this Council, among other things, should exercise all the powers of the Domestic and Foreign Missionary Society, and have charge of the unification, development, and prosecution of the work of Missions, Church Extension, Religious Education, and Christian Social Service. However, the Missionary Society retains its corporate existence and continues to receive and hold bequests, trust funds, and titles to property of all kinds. Domestic missionary work is carried on for the Indians, the negro communities, the Swedes, the Japanese in California, and the deaf-mutes in the South and West. This department also covers the work in Hawaii, the Philippines, Porto Rico, the Panama Canal Zone, and Alaska. Foreign missionary work is being carried on in Africa, China, Japan, Haiti, Brazil, Cuba, and Mexico. There is a Woman's Auxiliary which does much valuable work. *The Spirit of Missions* is the official organ of the missionary work.

The chief organization among the men of the church is the Brotherhood of St. Andrew with about 1200 chapters and 8000 members. The organizations among the boys are the Knights of St. Paul, with 160 chapters and the Knights of St. John. Among the special organizations for mission work are the Church Mission to

Deaf Mutes, Society for the Promotion of Church Work Among the Deaf Mutes, the Mid-Western Deaf Mute Mission, Conference of Church Workers among the Deaf, and the Seabury Society of New York. Among the national organizations for women and girls are the Girls' Friendly Society in America, the Order of the Daughters of the King, organizations for the Increase, Aid, and Better Sustenance of the Ministry, Clergymen's Mutual Insurance League, the Clergymen's Retiring Fund, and the Church Pension Fund. Organizations for educational purposes, church defense and propaganda are: The Protestant Episcopal Society for Promotion of Evangelical Knowledge, the Clerical Union for the Maintenance and Defense of Catholic Principles, the American Church Union, Albany Cathedral Summer School, Society for the Home Study of Holy Scripture and Church History, Cambridge Conference, the Church Periodical Club, New York Bible and Common Prayer Book Society, the Church Historical Society, the Church Missions Publishing Company, the American Society of Church Literature, and the Joint Diocesan Lesson Board. Organizations for social amelioration and advancement are: the Church Association for the Advancement of the Interest of Labor, the Church Socialist League, the Church Temperance Society, the Church Mission of Help, and the Society for Social Advance. There are many other local societies established for promoting church unity, various guilds for devotional purposes, and religious orders for both men and women.

PROUST, MARCEL. See FRENCH LITERATURE.

PROVENÇAL. See PHILOLOGY.

PRUSSIA. Till the October revolution of 1918 a kingdom of the German Empire; proclaimed a republic, Nov. 13, 1918. (See GERMANY and WAR OF THE NATIONS.) Capital, Berlin. Area, before the war, 134,650 square miles; population, according to the census of Dec. 1, 1910, 40,165,219. For details of population see preceding YEAR BOOKS. After the Treaty came into force modifications were made in the frontiers and during 1920 the exact limits were not fixed, but it was estimated that the loss to Prussia as the result of the war would amount to 31,266 square miles and a population of 7,965,000, thus leaving the area at about 103,384 square miles with a population, based on the census of 1910, of about 32,000,000. In 1910 the Protestants numbered 24,830,547 and the Roman Catholics, 14,581,829. The public debt, April 1, 1919 was given at 14,724,436,874 marks; revenue for 1919, 6,546,699,278, balancing the expenditure. Statistics for education, production, commerce, etc., dated in 1920 from the period before the war and will be found in preceding YEAR BOOKS.

The constitution was adopted in April, 1920, having been framed by the Prussian constituent national assembly, which was elected by universal suffrage and met March 1, 1919. Under the constitution, the ministry was vested with the powers formerly possessed by the king, and the parliament was elected for four years. The ministry appointed March 29, 1920, was constituted as follows: Premier and minister of agriculture, Herr Braun (Socialist); minister of the interior, Herr Severing (Socialist); minister of justice, Herr Zehnhoff (Centre); minister of public worship, Herr Hanisch (Socialist); minister of finance, Herr Ludemann (Socialist); minister

of national welfare, Herr Stegerwald (Centre); minister of railways, Herr Oeser (Democrat); and minister of commerce, Herr Fishbeck (Democrat).

PSYCHICAL RESEARCH. The year has seen the passing of the crest of the wave of popular interest in matters psychical. There is a change in the general tone of the writers, and in the nature of the subjects handled. The collection of evidence, in its various forms, still holds a place of importance.

The American Institute for Psychical Research lost by death its secretary, Dr. James H. Hyslop, on June 17, 1920, at the age of 66 years. Dr. Hyslop was also editor of the *Journal of the American Society for Psychical Research*.

Summarizing the general situation, J. H. Hyslop, in *Results of Psychical Research* (*The N. Amer. Rev.*, cexi, 80), finds that the evidence favors the spiritistic hypothesis as against that of mental telepathy as explanatory of messages, whose actuality he assumes. He believes that the difficulty of communication is due to our irrational way of living; a more rational and ethical life here will aid in establishing connections. H. N. Brown, in *Psychical Research* (*Harvard Theological Review*, xiii, 45), also holds that the whole matter resolves into the question of telepathy *vs.* spirits, with the argument favoring the spirits. The following new editions have appeared: H. Holt, *On the Cosmic Relations and Immortality*; Sir O. Lodge, *Survival of Man*; F. W. H. Myers, *Human Personality and Its Survival of Bodily Death*; and R. Ingalese, *History and Power of Mind*. Some of the many new books are: H. Bergson, *Mind-Energy*; *Lectures and Essays*, in which we are bidden to free the mind from the body, and to put it into its proper relations to the world of spiritual energy; H. Carrington, *Higher Psychical Development*, in which the secrets of the Hindu Yogis are brought into relation with the psychical investigations of the West; H. W. Dresser, *Open Vision*; *A Study of Psychical Phenomena*—namely, of the phenomena by which we are supposed to achieve an inner awareness of the spiritual world of which we are a part; J. A. Hill, *Psychical Miscellanea*; *Being Papers on Psychical Research, Telepathy, Christian Science, Etc.*, a sympathetic treatment of the topics given in the sub-title; J. Magnussen, *God's Smile* (tr. by D. K. Dodge), the story of a Danish dramatist who found the evidence from table-tipping and automatic writing convincing; and P. E. Carnillier, *La survivance de l'âme*, the story of a painter who hypnotized his model, as a means of diversion, whereupon the model showed mediumistic powers, and after some hundred sances the skeptical painter evinced faith. Other books of a general nature are: E. K. Bates, *Children of the Dawn*; G. Cannan, *The Release of the Soul*; L. Chevreuil, *Proofs of the Spirit World*; W. N. Clarke, *Immortality*; M. Heindel, *The Web of Destiny*; H. Holt, *Essays on Psychical Research*; C. Kernohan, *Spiritualism*; J. S. King, *Dawn of the Awakened Mind*; A. W. Lane and H. B. Beale, *To Walk with God*; M. A. McEvilly, *Meslom's Message from the Life Beyond*; A. J. Schofield, *Modern Spiritism*; *Its Science and Religion*; L. Spence, *An Encyclopedia of Occultism*; R. Steiner, *Investigations in Occultism*; G. Williams, *Fear not the Crossing*; W. S. Walsh, *The Psychology of Dreams*; and M. Weil, *Experiences of a Medium*. The follow-

ing aim more directly at instruction, or at bringing daily life and literature into relation with the doctrines of spiritualism: R. T. Brown, *The Mystery of Space*; H. Carrington, *Coming Science and Your Psychic Powers and How to Develop Them*; J. L. French, editor, *The Best Psychic Stories*; Lady Gregory, *Visions and Beliefs in the West of Ireland*; A. de Koven (Mrs. Reginald), *A Cloud of Witnesses*; J. W. McSpadden, *Psychic Stories*; A. Sinnett, *Occult Teaching; Collected Fruits*; G. E. Wright, *Practical Views on Psychical Phenomena*; and G. V. Owen and H. A. Dallas, *The Nurseries of Heaven*. Most of the articles have to do with evidential cases from which, however, no conclusions are drawn: a studied attempt not to antagonize by dogmatic assertion. From the *Proceedings* of the English Society we mention Miss Radclyffe-Hall and (Una) Lady Troubridge, *On a Series of Sittings with Mrs. Osborne Leonard* (*Proc. S. P. R.*, xxx, 339), in which the medium transmits messages about past and present events as well as discloses facts unknown to the sitters. C. G. Jung, in *The Psychological Foundations of Belief in Spirits* (*ib.*, xxxi, 75), concludes that spirits are autonomous complexes which appear as projections because they are not associated to the Ego. T. W. Mitchell, in *The Doris Fisher Case of Multiple Personality* (*ib.*, 30), finds no proof or necessary reason for assuming the spiritistic explanation of the personality of Sleeping Margaret. The *Journal of the American Society for Psychical Research* devotes two numbers (*Jour. A. S. P. R.*, xiv, 425-522), to an *In Memoriam* for J. H. Hyslop, some of whose papers are: *Incipient Mediumship* (*ib.*, 72), *Consulting Spirits* (*ib.*, 119), *Recent Experiments with Mrs. Chenoweth as Medium* (*ib.*, 163), and *Experiments for Phasmatographs* (*ib.*, 284). Other articles are: G. O. Tubby, *Three Evidential Sittings* (*ib.*, 9); W. F. Prince, *The Oracles of Baalam* (*ib.*, 556). See also C. Scott, *Clairvoyance, Spiritism, and Occultism in Music* (*Etude*, xxxviii, 15), and *Psychic Influence in Modern Music* (*ib.*, 229); F. R. Whitzel, *Cosmos and Its Meaning; A Philosophic Interpretation of the Tenets of the Psychical Research Society* (*Open Court*, xxxiii, 693); and J. Jastrow, *Spiritualism and Science* (*Rev. of Revs.*, lxi, 504).

PSYCHOLOGY. All psychologists of whatever school or trend deplore the death of the foremost representative of this science. W. Wundt, professor of philosophy at Leipzig and founder of the famous psychological laboratory, died September 1st at the age of 88 years. Wundt was fortunately able to round off his life's work by the completion of his 10-volume *Völkerpsychologie*, the greatest of all contributions so far made to Social Psychology.

Others lost to psychology by death are: T. Flournoy, professor of philosophy and psychology at the University of Geneva, Nov. 5, 1920, at the age of 66 years; P. Ladame, psychiatrist, author of works on hypnotism, neurology, and aphasia, Oct. 21, 1919, at the age of 77 years; E. E. Southard, Bullard professor of neuropathology at Harvard University, Feb. 8, 1920, at the age of 44 years; and A. Tamburini, professor of psychiatry at Rome, founder of the first Psychological Laboratory in Italy in 1896, July 28, 1919, at the age of 71 years.

The annual meeting of the American Psychological Association was held at Chicago, Ill.,

December 28th, 29th, and 30th, under the presidency of Dr. S. I. Franz. The Third Congress of Italian psychologists met at Naples in July under the direction of Prof. C. Colucci. There has been founded a new Institute of Psychology at the University of Paris, which absorbs the Institute of Pedagogy. The *Archivio Italiano di Psicologia* is a new periodical edited by F. Kiesow and A. Gemelli.

GENERAL PSYCHOLOGY: TEXT-BOOKS AND TREATISES. J. Fröbes' *Lehrbuch der experimentellen Psychologie* is a compendium or hand-book of experimental results. O. Külpe's *Vorlesungen über Psychologie*, a posthumous work edited by K. Bühler, is interesting for its treatment of feeling and disappointing by its failure to discuss the processes of thought. There is a second edition of T. Flournoy's *Métaphysique et Psychologie*, with a preface by H. Höfding. C. Stumpf's *Empfindung und Vorstellung* is systematically important. H. Gruender has published the first volume of an *Introductory Course in Experimental Psychology*; it contains 125 short experiments requiring simple equipment. *The Foundations of Music* by H. J. Watt is in part a psychological treatment of the subject. Other technical books are: B. Erdmann, *Grundzüge der Reproduktionspsychologie*; W. Wirt, *Spezielle psychophysische Massmethoden*; A. Pfänder, *Einführung in die Psychologie*. The following are of a more popular type: C. A. Ruckmick, *Brevity Book on Psychology*; E. Severn, *The Psychology of Behavior*; F. Tracy, *The Psychology of Adolescence*; J. T. Merz, *A Fragment on the Human Mind*; H. L. Eno, *Activism*; C. G. Shaw, *Short Talks on Psychology*; W. D. McKim, *Study for the Times*; J. B. Pratt, *The Religious Consciousness; A Psychological Study*; W. Macpherson, *Psychology of Persuasion*; A. G. Tansley, *The New Psychology and Its Relation to Life*; and G. S. Hall, *Recreations of a Psychologist*. J. S. Haldane, D'Arcy W. Thompson, P. C. Mitchell, and L. T. Hobhouse discuss the question: *Are Physical, Biological, and Psychological Categories Irreducible*, and on the whole reply to it in the affirmative. E. G. Boring and E. B. Titchener (2101) give a critical analysis of Wrightson's theory of hearing. R. M. Ogden, in *The Tonal Manifold* (19,136), presents graphically the tonal manifold with the dimensions of intensity, volume, and pitch-brightness. W. Resch (6,e,1) gives a résumé of Wundt's psychology of the will. Other general articles are: A. Storch (6,c,113), on the psychology and pathology of self; K. Gross (28,lxxviii), on the psychological motives of monism; M. Moog (6,c,301), on the relation of psychology to logic and epistemology; E. R. Jaensch (28,b,257), on the psychology of color; and T. Haering (6,c,1), on evaluation. E. B. Titchener (2,213) presents a tentative form of "touch" pyramid which relates all the qualities, except warm and cold, which have their end organs in skin, muscle, joint, and tendon.

The problem of perception stands out as dominant for the year. Theoretical and epistemological discussions find but a small place; direct experimental investigations of phenomenological tendency are fairly numerous. F. L. Dimmick, in *An Experimental Study of Visual Movement and the Phi Phenomenon* (2,317) discovers a gray flash, independent of the background color, as the correlate of Wertheimer's "pure" visual movement. V. Benussi, in *Ver-*

suche zur Analyse taktil erweckter Scheinbewegungen nach ihren äusseren Bedingungen und ihren Beziehungen zu den parallelen optischen Phänomenen (6,b,), finds that the most important condition is the quotient of total time and time between stimuli; that there is very clearly something given in experience; and that the magnitude of the movement is practically without limit. In another study (6,c,233), the same writer examines four types of complex illusory movement, mostly by the stroboscopic method. The appearance or the failure of the particular illusion depends very largely on the attitude of the observer. K. Koffka (28,a,257) attempts a formal analysis of Wertheimer's supposed central irradiation in terms of Korte's laws. M. J. Zigler (2,273) takes up the work on the perception of form where Schumann dropped it. By variation in method he is able to go beyond Schumann and to isolate the data of experience for most of the forms studied; he also demonstrates the correlation of these diverse data with shifts in meaning. M. A. Goerrig (6,b,) makes a psychophysical study of the influence of time on unseen movements of the arm. M. Binnefeld (6,c,129) investigates the relation of sensations from movements of the eyes to the estimation of linear and punctual extents. The DL's as well as the empirical factors vary with changes in the conditions. K. Goldstein and A. Gelb (28,b,07) give the results of a study of the tactual localization, the perception of movement and the tactual space perception of a blinded subject whose wound affects the left occipital lobe. The subject could not distinguish two points or tell the position of a limb with the body at rest; and although he could make a drawing of an object he was unable to recognize the drawing as that of a particular object. The authors distinguish two kinds of "ideas" of movement, and conclude that there is no cutaneous or kinæsthetic basis for the perception of space. F. Schumann (28,d,224) continues the work of Hering and Jaensch on the perception of "seen" depth. He maintains the existence of a specific "glassy" sensation. H. Friedlaender (28,b,258) examines the conditions affecting the perception of lifted weights, and finds that duration, area, and intensity of stimulus are all important. Subcutaneous sensations and cutaneous pressures are alike adequate for the perception. Objectification, which makes for finer discrimination, depends upon the direction of attention to visual ideas and to past experiences of the same kind. L. B. Hoisington (2,114) finds that the non-visual perception of the length of lifted rods depends upon two opposed pressures which stand to each other in a certain limited range of intensive ratio; on the objective side, the distance of the centre of mass from the hand is important. C. R. Griffith (14,89) shows that dizziness is a complex perception, that certain of its component sensations fall off rapidly and even disappear with repetition, and that the mental and bodily state of the observer influences the experience in a marked way. In another study (14,15), the same writer proves that nystagmus, as measured by the duration, the number, and the amplitude of eye movements, decreases rapidly with repeated rotations. In a study of "some factors in the perception of relative movement" H. A. Carr and M. C. Hardy (19,24) find that increased size and intensity of the stimuli (lights) favor the perception; rate of movement

is of less account. The results obtained by G. W. Stewart (19,425) upon auditory localization confirm the "phase difference" theory. R. Prantl (28,a,293), in an experiment on the perception of words turned at different angles to the observer, discovers that any deviation from the normal position decreases the rate of reading, and that the greatest decrease occurs at 150° and 210° with slight improvement at 180°. The results of O. Kutzner (6,a,), who used a greater variety of conditions, point to the determining influence of form of combination. O. Sterzinger (6,b,) shows that the "form" of a musical interval depends on the character of the higher single tone, distance, and consonance, and that its æsthetic value depends on direction of attention and associative factors. R. H. Paynter (7,No.3) publishes a practical study on the perception of names in connection with trade-mark infringements. Krass (6,c,300&402) reports two touch illusions; J. Kollerts (6,c,403) an auditory and a touch illusion. J. Wittman (6,e,69) discusses various theories of perspective involution in relation to experimental results. J. Lindsey (22,69) and G. E. Moore (4,1) consider perception from an epistemological point of view.

Experimental investigations of purely sensory experience are scanty. H. Sheppard (2,34) shows that adaptation to color takes place under high as well as under moderate or weak conditions of illumination, and that differences in chroma and to a less extent in brightness explain the differences in the time of complete adaptation. C. E. Ferree and G. Rand (19,1) find with a single observer that the limits of color sensitivity for R, Y, and B coincide with that for white light, if the intensity of illumination is very high; with lesser intensity, the fields narrow but remain concentric and interlaced. The limit for G obeys the same laws, but is narrower. According to M. A. Bills (20,No.127), the lag in visual sensation varies with wave-length and with intensity. The colors shift their position, relatively to the amount of lag, with increased intensity. E. R. Jaensch and E. A. Mueller (28,b,266) give the conditions effective for the phenomenon of visual transformation and conclude, against Hering, that it obeys the same laws as contrast and does not depend upon contrast. E. R. Jaensch (28,b,342) finds that Katz' law of transformation holds likewise for contrast. F. L. Dimmick (2,301) argues that Gr is a terminal quality between Bk and W; we thus have two series, W to Gr and Gr to Bk, instead of the one ordinarily assumed. A. P. Weiss and E. L. Gatewood (2,166 and 194) publish studies of the vocal character of tones. The former writer employs pure tones, the latter, tuning-fork, violin, and piano tones, with children and unpracticed observers. The lower and higher tones give fairly consistent results; the intermediate tones show much inconsistency. The results do not support Köhler. J. H. Alston (2,303) finds that the sensory quality of heat may arise when the simultaneously stimulated warm and cold spots are as far apart as 12 cm., and that the heat-quality may appear with or without the warm or the cold. R. H. Wheeler (18,No.5) reviews the "literature" of synæsthesia and makes an inconclusive report on the synæsthesia of a blind subject. He inclines to an explanation in reflex terms. S. D. Robbins (19,38) proposes a new test for types of verbal imagery. Long vowels receive more attention

than short, and short vowels more than consonants. J. Segond gives us a practical study in *L'imagination pure et la vie esthétique* (23,58). E. R. Jaensch (28,d,37) discusses the nature and the conditions of two types of visual imagery.

Size, measured in terms of intensity, is a condition of attention according to A. M. Bowman (2,31), although the influence of position cuts across the results. K. M. Dallenbach (14,183) confirms and extends the work of Britz on the conditions of cognitive clearness. He is able on the basis of the reports of his observers to distinguish clearly between attributive vividness and cognitive clearness. The conditions of the former condition the latter, although the reverse of this statement is not true. A. Gemelli and A. Galli (*Arch. Ital. Psicol.*, i,39) report a study on the duration of attention by a new method. They find that attention fluctuates within short intervals.

J. B. Watson and R. Rayner (14,1) are able to set up conditioned fear-reactions in a child nine months old. If they stimulated erogenous zones simultaneously with the presentation of the object that called forth the fear-response, this concurrent stimulation interfered with the persistence of the conditioned fear. L. Cellerier (5,257) reviews the "literature" of organic reaction and affective state, and shows that there is no specific reaction to pleasantness and unpleasantness, but that the "affective" reaction is really one of adjustment. W. Boyd (*J. Exp. Ped.*, v,128) studies a long list of children's fears, and concludes that there are some specific and some general instinctive tendencies to fear. I. R. Kaiser (24,243) gives a popular account of the psychology of the thrill. J. T. Troland (1,376) explains affective phenomena in terms of conductance: the quality depends on sign and the intensity upon rate. J. P. McGonigal (19,73) argues that the fear-reaction is a descendant of the death-feint in lower forms of life, due primarily to the effect of thyroxine.

Action has attracted but few investigators. S. Grundland (6,a,) makes out, under five sets of instructions, nearly 40 types of simple reaction. The distinction between sensory and motor reaction depends upon the activity or passivity of the fore-period, and not upon simple direction of attention. P. Mueller (6,e,89) determines the temporal limens for disturbed and undisturbed reaction. Under the reactive attitude the two limens agree; under the anticipatory attitude, the difference averages 64σ. E. L. Gatewood (20,No.126) finds different reaction-times for the different fingers, as well as for the two hands. When taken in combination, a right-hand and a left-hand finger gave the shortest time; two right-hand fingers, the next; and two left-hand fingers, the longest. Three types of reaction significant for the detection of deception appear in the work of W. M. Marston (14, 72). J. E. Downey (2,208) finds that pen-lapses derive from visual experiences.

MEMORY, ASSOCIATION, THOUGHT. S. Kovacs (6,c,283) makes out two kinds of memory, recognitive and communicative, with their corresponding attitudes. T. V. Moore (20,No.120) concludes that power of retention and power of perception tend to deteriorate together. Since, however, there are cases where the one fails out of all proportion to the other, they must be separate functional abilities. Y. Delhorbe (5,309) finds a very high correlation between memory for

words and memory for images. K. Lewin (28, lxxvii,) concludes that the essential condition for association is the readiness of reproductive "activity," and not consecutive repetition or *Aufgabe*. O. Selz (28,b,211) argues for the complex of the thought-psychologists and against the constellation of the associationists. O. Sterzinger (6,c,363) traces the elements and their form of combination in poetic images. A. A. Gruenbaum (6,b, ;c,74;d,182) offers three papers on the general nature of the thought-consciousness. Two papers on kindred subjects are by L. Rangette (6,b,) and M. Nachmansson (6,b,). Two studies on the process of abstraction are by E. Achenbach (6,a,) and F. Seifert (28,lxxviii,); two on the relation of process to meaning are by T. V. Moore (20,No.119) and A. R. McDonough (20,No.122). R. H. Wheeler (18,No.2) publishes *An Experimental Investigation of the Process of Choosing*, and F. Paulhan (23,1) *La sensibilité, l'intelligence et la volonté dans tous les faits psychologiques*.

MENTAL MEASUREMENT. E. G. Boring (*Psych. Bull.*, xvi, 335; 2,1; *Science*, N.S. ii,129) calls for a close scrutiny of some of the fundamental assumptions of mental measurement. He holds that we are not justified, in the case of mental functions, in postulating the validity of the normal law. B. Ruml (21,57) declares that, in mental testing, we assume certain working hypotheses which, if not false, need to be proved. G. H. Thomson (9,319), in *The General Factor Fallacy in Psychology*, shows, in opposition to the argument of Spearman and Garnett, that a hierarchical arrangement of coefficients of correlation does not necessarily imply a common factor. E. L. Thorndike (3,25) points out a constant error in psychological ratings. S. W. Fernberger (14, 126) obtains very different results from experiments with lifted weights according as the second weight is always preceded by a lighter or by a heavier weight. W. McClelland (9,315) proposes a correction for all psychological and educational measurements. The Scott Co. Laboratory (3,115) publishes a table to facilitate the computation of coefficients of correlation by the rank-order method.

APPLIED PSYCHOLOGY. The interest in the selection of men by the use of psychological principles and tests developed during the war has carried over into the industrial world. W. H. R. Rivers, in *Psychology and the War* (*Scribners Mag.*, lxxviii,161), sums up the general situation by saying: "War emphasized the need of a psychology that has or may have social application. The work on neuroses and the industrial relations has started us on the way to a more practical psychology from the social standpoint." H. L. Hollingworth answers in the affirmative the question *Can Workers Be Tested* (*Business Personnel*, i,16). G. S. Hall (24,281) discusses six basal instincts in their bearing on the industrial situation. H. C. Link, in *A New Application of Psychology to Industry* (3,245), finds that the psychological test not only selects the right person for the particular work, but also aids in the discovery of bad conditions which make for discontent and so for inefficiency. E. Frost, in *What Industry Wants and Does not Want from the Psychologist* (3,18), argues that the psychologist helps most in the solution of industrial problems when he shows the importance of psychology itself. M. C. Jarrett, in *The Mental Hygiene of Industry* (16,867), upholds

the theses that industrial organization calls for attention to individual mental characteristics; that the mental sciences can give practical help in dealing with minds in everyday actions; and that it is feasible to use mental science in industrial organization. H. D. Kitson, in *Economic Implications in the Psychological Doctrine of Interest* (*J. Polit. Econ.*, xxviii,332), maintains that it is the psychological state of interest that must be brought out in our economic relations. E. E. Southard, in three articles (16,43;281; 550), tells of the important part psychologists and psychiatrists are to play in our industrial life. Other articles are: F. B. Gilbreth and L. M. Gilbreth, *How to Increase Production* (*Ind.*, cii,354); H. D. Kitson, *Vocational Guidance and the Theory of Probability* (*School Rev.*, ii,143); C. S. Meyers, *Psychology and Industry* (9,177). Some books which deal with the relation of psychology to industry are: E. L. Benedict, *Practical Psychology*; H. Chellow, *Human and Industrial Efficiency*; S. Cody, *Commercial Tests and How to Use Them*; F. C. Kelly, *Human Nature in Business*; B. Muscio, *Lectures on Industrial Psychology*; and F. Watts, *The Psychological Problems of Industry*. Two books of a special nature are: W. D. Scott, *Psychology of Advertising* and H. D. Kitson, *Manual for the Study of the Psychology of Advertising and Selling*. In the following papers we find accounts of specific trade tests: W. Benary (27,250), H. M. Johnson (*Science*, civ,449), E. Murray (3,30), R. S. Roberts (13,101), O. Lippman and O. Stolzenberg (27,173), and S. Wyatt and H. C. Weston (9,293).

EDUCATIONAL PSYCHOLOGY. D. W. LaRue's *Psychology for Teachers* is a text written from a purely practical point of view. M. V. O'Shea's *Mental Development and Education* follows the lines laid down in his earlier works. O. Lippmann publishes a brief *Psychologie für Lehrer*. M. Drummond, in *The Dawn of Mind*, gives a fairly orthodox view of the development of mind; she follows McDougall in her treatment of the instincts. Another general treatise is A. S. Edwards' *Fundamental Principles of Learning and Study*. R. A. Mackie's *Education during Adolescence* applies the principles of G. S. Hall. B. Muscio in *Fluctuations in Mental Efficiency* (9,317) finds no evidence for decreased efficiency after work. Sir R. Blair (*Nature*, cvi,323) pleads for a science of education which goes beyond mere applied psychology. In *Imagination and Its Place in Education*, E. A. Kirkpatrick applies to school subjects the facts so far gathered concerning the imagination of children. F. H. Allport, in *The Influence of the Group upon Association and Thought* (14,159), finds that the group improves quantity and not quality. Other studies are: P. Tyer, *Training the Subconscious Mind in the School Room* (*Ed.*, xl, 289); H. E. Purcell, *Teaching Psychology via Life* (*Ed. Rev.*, lix,395); A. Richards, *School Adjustment and the Psychic Environment* (24,178); T. R. Garth, *The Psychology of Riddle Solution: An Experiment in Purposeful Thinking* (13,16); R. C. Moore, *The Emotion of Admiration and Its Development in Children* (*J. Ea. Ped.*, v,221); G. F. Arps, *Work with Knowledge of Results versus Work without Knowledge of Results* (20, No. 125); G. S. Snoddy, *An Experimental Analysis of a Case of Trial and Error Learning in the Human Subject* (20, No. 124); J. Peterson, *The Backward Elimination of Errors in Mental Maze*

Learning (14,257); and P. E. Kretzmann, *Psychology and the Christian Day-School*.

MENTAL TESTS. Workers in the field of mental testing tend to place more emphasis on practical application and less on the tests as tests. The tendency shows itself especially in the use of tests in schools and colleges as the basis for grading or for college entrance in the absence of other examinations. As examples we have: S. S. Brooks, *Using Standardized Tests in Rural Schools for Grading Purposes* (12,729); R. Pintner and H. Noble, *The Classification of School Children According to Mental Age* (12,713); S. L. Pressy and L. W. Pressy, *Measuring the Usefulness of Tests in Solving School Problems* (26, 531), where brief tests for the Junior High School and the entering primary classes corrected all gross misplacements; and W. D. Armstrong (13, 165), who found the Otis scale satisfactory for classifying high-school pupils. Other reports are: L. M. Terman, *The Use of Intelligence Tests in the Grading of School Children* (12,20); W. M. Proctor, *Psychological Tests as a Means of Measuring the Probable Success of High School Pupils* (12,258); *The Use of Psychological Tests in the Educational Guidance of High School Pupils* (12,369). M. M. Wentworth (26,58) finds the army Alpha tests better than teachers' estimates for selecting students of college grade; and W. H. Smith (26,71) proves that the results from the use of the Otis Group Intelligence Tests afford a reliable basis for predicting high-school success. Some reports on the use of tests with college students are: J. E. Anderson, *Intelligence Tests of Yale Freshmen* (26,417); E. A. Jones, *Army Tests and Oberlin Freshmen* (26, 389); E. L. Noble and G. F. Arps, *University Students' Intelligence Ratings According to the Army Alpha Tests* (26,233); A. L. Rodgers, *Mental Tests as a Means of Selecting and Classifying College Students* (13,181); M. J. Van Wagenen, *Some Results and Inferences Derived from the Use of the Army Tests at the University of Minnesota* (93,59); and I. N. Madsen, *High School Students' Intelligence Ratings according to the Army Alpha Tests* (26,298). S. S. Colvin, in *The Validity of Psychological Tests for College Entrance* (*Ed. Rev.*, lx,7), gives three reasons why psychological tests fail to agree with college records. Practically all the new tests are for group examination. They include the National Intelligence Tests prepared under the auspices of the National Research Council by M. E. Haggerty, L. M. Terman, E. L. Thorndike, G. M. Whipple, and R. M. Yerkes, Chairman; the *Otis Group Intelligence Scale*; the *Standard Educational Tests* by M. E. Haggerty; *Haggerty Reading Examination*; the *Terman Group Test of Mental Ability*; W. H. Pyle, *A Manual for the Mental and Physical Examination of School Children* (revised); E. Reedy and J. W. Bridges, *A Short Point Scale for Mental Measurement* (3,258); R. Pintner and F. Fitzgerald, *An Educational Survey Test* (13,207); S. L. Pressy, *A Brief Group Scale of Intelligence for Use in School Surveys*; D. Herderschee, *Tests für taubstumme Kinder* (27,40), a series of 31 tests graded according to year; and M. J. Van Wagenen, *Graded Opposites and Analogies Tests* (13,240). R. Pintner and S. Renshaw, in *A Standardization and Weighting of 200 Analogies* (3,263), give three significant values. Other articles dealing with some phase of tests are: E. Claparède, *Percentilages de quelques tests d'aptitude* (5,

313); *De la constance des subjects à l'égard des tests d'aptitude* (5,325); G. E. Bird, *A Test of Some Standard Tests* (13,275); J. N. Curtis and G. A. Taylor, *The Application of Mental Tests to Persons over Fifty Years of Age* (3,39); E. A. Lincoln, *The Effects of Native Intelligence upon Scores in Standard Tests* (acquisition) (26, 441); L. W. Pressy, *The Influence of Inadequate Schooling and Poor Environment upon Results with Tests of Intelligence* (3,91); G. C. Myers, *Intelligence of Troops Infected with Hookworm vs. Those not Affected* (24,211); J. F. Dashiell, *The Effect of Practice on Two Mental Tests* (13, 151); and C. S. Yoakum and R. M. Yerkes, *Army Mental Tests*. On the side of special abilities we have: G. Revèz, *Prüfung der Musikalität* (28, d,163); S. L. Pressy and O. R. Chambers, *First Revision of a Group Scale Designed for Investigating the Emotions* (3,97); and J. E. Downey, *The Adolescent Will Profile* (13,157) and *Some Volitional Patterns Revealed by the Will Profile* (14,281). M. E. Loughlin (20, No. 121) gives the results of an inquiry into the etiology of feeble-mindedness, and H. A. Toops and R. Pintner (14, 231) publish *Curves of Growth of Intelligence*. S. Cody (21,572) formulates rules for mental measurement. M. R. Trabue and F. P. Stockbridge, in *Measure Your Mind*, offer a handbook for the layman.

SOCIAL PSYCHOLOGY. Mention has already been made of Wundt's *Völkerpsychologie*. An important book in this field is W. McDougall's *The Group Mind*, developed along the lines laid down in the author's *Social Psychology*. I. Edman, in *Human Traits and Their Social Significance*, deals with social institutions as means of control over man's unchanged nature. G. E. Partridge, in *Psychology of Nations*, outlines the social past and gives a programme of education for the future. E. D. Martin, in *The Behavior of Crowds; A Psychological Study*, makes hate the impelling motive of the crowd. R. R. Marett, *Psychology and Folk Lore*; C. I. Major, *How to Develop Will Power*; G. W. Patrick, *The Psychology of Social Reconstruction*; and F. A. Parsons, *The Psychology of Dress* are books with a social reference. Works which treat of the political aspect of social life are: F. A. Beecher, *National Politics in Its Psychological Aspect* (*Open Court*, xxxiii, 653) and L. Maury, *Psychologie et politique* (*Rev. polit. et litt.*, lviii, 632). Psychology in its relation to criminal procedure is the theme of: G. G. Fernald, *Importance of Character Study in Criminology* (10, 107); E. A. Doll, *Study of Multiple Criminal Factors* (10,33); J. R. Oliver, *Emotional States and Illegal Acts* (10,77); C. E. Benson, *Study in Criminal Psychology* (10,119); P. L. Gray, *Children and the Cinema* (*J. Exp. Ped.*, v,194); and R. Pettow, *Zur Psychologie der Transvestie* (8,b,).

PSYCHOLOGY OF THE ABNORMAL. *The Psychology of Subnormal Children* by L. S. Hollingsworth is an outstanding book in this field. The author brings to her work insight enriched by years of experience. Another book of general interest is *Abnormal Psychology and Education* by F. Watts. Books on general and special neuroses are: M. Culpin, *Psychoneuroses of War and Peace*; G. Dumas, *Troubles mentaux et troubles nerveux de guerre*; Dumas et Aime, *Névroses et psychoses de guerre chez les Austro-Allemands*; H. L. Hollingworth, *Psychology of Functional Neuroses*; Porot et Hesnard, *Psy-*

chiatric de guerre et l'expertise mentale militaire; E. Jones, *Treatment of the Neuroses*; and Roussey, Boisseau, D'Oelsnitz, *Traitement des psychonévroses de guerre*. A. Leclère offers a *Contribution à l'étude des régressions psychiques* (23,203). J. C. Foster, in *Significant Responses in Certain Memory Tests* (3,142), finds that both the quality and the quantity of response are significant for certain psychoses. S. Freud's *General Introduction to Psychoanalysis* is both simple and authoritative. Two other books, B. Low's *Psychoanalysis* and A. Tridon's *Psychoanalysis; Its History, Theory, and Practice* give general accounts of the Freudian theory. P. H. Furfey and T. V. Moore, in *Conscious and Unconscious Factors in Symbolism and Hypnotic Analogies* (20, No. 121), argue for an extension of subconscious motives. According to G. Humphreys, in *The Conditioned Reflex and the Freudian Wish* (1,338), the wish is a more or less complicated system of interdependent reflexes and does not derive necessarily, or in any case directly, from the sex-complex. C. E. Corey (1,369) describes a case of automatic drawing which is of interest because the dissociated controlling complex belongs to one of the highest functions of mind. In *Psychoanalysis and Behavior*, A. Tridon shows how all human conduct may be interpreted from the psychoanalytic point of view. E. Holmes (15,509) and E. M. Caillard (15,776) wish to put the principles of psychoanalysis to use for preventive purposes. I. H. Coriat, in *Repressed Emotions*, treats psychoanalytically of repressed emotion in primitive society and in literature. The following are specific cases of psychoanalytic treatment: E. S. Conklin (2,59) *The Foster Child Fantasy*; G. Berguer, *Quelques traits de la vie de Jésus au point de vue psychologique et psychanalytique*; R. de Saussure, *A propos d'un disciple D'Untermyer* (5,297); I. H. Coriat, *Hysteria of Lady Macbeth*; L. Dooley, *Psychoanalysis of Charlotte Brontë, as a type of the Woman Genius*; (2,221); and L. Pruetf, *A Psychoanalytic Study of Edgar Allen Poe* (2,370). The following list attests the popular interest in the subject: P. M. Blanchard, *The Adolescent Girl*; M. K. Bradby, *Psychoanalysis and Its Place in Life*; R. Briffault, *Psyche's Lamp*; P. Bousfield, *Elements of Psychoanalysis*; P. C. Bjerre, *History and Practice of Psychoanalysis* (2d ed); E. Evans, *Problem of the Nervous Child*; H. J. O'Higgins, *The Secret Springs*; J. Varendouck, *The Psychology of Day Dreams*; W. S. Walsh, *Psychology of Dreams*; B. Malzberg, *Child's Mind à la Freud* (*Soc. Hyg.*, vi,105); S. N. Paten, *Analysis of Mental Defects* (*Monist*, xxx, 107); D. G. Mason, *Psychoanalysis and Music* (*Arts and Dec.*, xiii,106); and H. C. Grumbine, *Reaction of a Layman to Psychoanalysis* (*Scribners M.*, lxxviii,602).

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xxvii. (20) *Psychol. Rev. Monog. Suppl.*, xxviii. (21) *Jour. Phil. Psychol. and Sci. M.*, xvii. (22) *Phil. Rev.*, xxviii. (23) *Revue phil.*, xc. (24) *Ped. Sem.*, xxvii. (25) *Psychobiology*, iii. (26) *School and Society*, xi. (27) *Zeit. f. angew. Psychol.*, xvi. (28) *Zeit. f. Psychol.*, a., lxxxii; b., lxxxiii; c., lxxxiv; d., lxxxv.

PUBLIC SCHOOLS. See EDUCATION.

PUGILISM. See BOXING.

PULITZER TROPHY. CONTEST. See AERONAUTICS.

PULP. See PAPER.

PUMPELLE, JOSIAH COLLINS. Lawyer, died January 5. He was born at Owego, N. Y., Aug. 16, 1839; graduated at Rutgers College in 1860, and studied at Columbia University. He aided in raising and drilling men in the Civil War. He was one of the founders of the Huguenot Society in the United States and a member of other social organizations. He published *Our French Allies and Other Addresses* (1889) and was on the staff of the *American Magazine*.

QUAKERS. See FRIENDS.

QUEBEC. A province of Canada, extending from Ontario to the northern border of the United States and New Brunswick, northward to the Hudson Strait and including most of the Labrador peninsula. Capital, Quebec. Estimated area, 706,834 square miles, including 15,969 square miles of water. Population (1911) 2,003,032, of whom 1,605,339 were of French origin. The above figures apply only to the area possessed by Quebec before 1912, namely 351,873 square miles and do not include Ungava which was annexed in 1912. In 1917 the population of the whole province was estimated at 2,380,042, of which 1,145,646 was rural and 1,234,396 urban. Population of the chief cities in 1917: Montreal, 700,000; Quebec, 103,000; Maisonneuve, 37,200; Hull, 25,400. It is under a Lieutenant-Governor who acts through an executive council or a responsible ministry; a legislative council of 24 members appointed for life and a legislative assembly of 81 members elected for five years. As the result of the election held in June, 1919, the members of the legislative assembly were distributed by political parties at the beginning of the year as follows: Liberals, 72; Conservatives, 7; Labor, 2. Lieutenant-Governor at the beginning of 1920, Sir Charles Fitzpatrick; Prime Minister, Sir Lomer Gouin.

QUEENSLAND. A state of the Commonwealth of Australia, situated to the north of New South Wales, and next to the largest of the Australian states. Area, 670,500 square miles; population (1911) 605,813; estimated, June 30, 1919, 712,827, exclusive of aborigines, who were estimated at 20,000. Immigration in 1918 was 110,878 and emigration including the expeditionary forces, 104,749. Total births in 1918 were 19,560; deaths, 7158. Capital, Brisbane, with a population estimated in 1918 at 181,199. Executive power is in a Lieutenant-Governor who acts through a responsible ministry; and legislative power in the legislative council of 49 members appointed by the Crown for life and the legislative assembly of 72 members elected by male and female adult suffrage. The Governor at the beginning of 1920 was Maj. Sir Hamilton John Goold-Adams and the Prime Minister, E. G. Theodore. See AUSTRALIA.

QUICKSILVER. Preliminary figures showing the production of quicksilver in the United States in 1920, compiled by the United States

Geological Survey, gave a total of 13,070 flasks. Of this output 9366 flasks was credited to California, 3601 flasks to Texas, 79 flasks to Nevada, and 24 flasks to Oregon. So far as known neither Idaho nor Arizona produced any quicksilver. The year was a discouraging one to quicksilver mine operators, who had to face a decline in prices consequent upon a decreased demand for their product and found little relief from the prevailing high cost of labor and supplies. Such demand as there was for the metal was met from surplus stocks accumulated during the war, from quicksilver originally sold abroad but resold in this country, and from imports. The average price of quicksilver in 1920 per flask of 75 pounds, as quoted by the mining and scientific press for the San Francisco market, was \$79.66. The highest monthly average was \$100, in April, and the lowest was \$52, in December. The price held up fairly well to the end of August but then fell steadily to the end of the year.

RACING. Thoroughbred racing attained the heights of popularity in 1920 especially in the United States. Record crowds visited the tracks in the vicinity of New York daily, the climax being reached on Memorial Day at Belmont Park when there were 42,000 paid admissions. The season was also noted for the remarkable showing made by Man O'War, a three-year old owned by Samuel C. Riddle. This superhorse piled up the unprecedented total of \$244,465 in winnings during 1919 and 1920, being undefeated in 11 starts in the last-named year.

A summary of Man O'War's wonderful record during 1920 follows:

May 18—won Preakness Stakes at Pimlico; May 29—won the Withers at Belmont Park, establishing a new track record of 1 minute, 35½ seconds for the mile; June 12—won the Belmont Stakes at Belmont Park, establishing a world's record of 2 minutes, 14½ seconds for a mile and three-eighths; June 22—won the Stuyvesant Stakes at Jamaica; July 10—won the Dwyer Stakes at Aqueduct, establishing a new American record of 1 minute, 49½ seconds for a mile and one-eighth; August 8—won the Miller Stakes at Saratoga; August 21—won the Travers Stakes at Saratoga, establishing a new track record of 2 minutes, 1½ seconds for a mile and a quarter; September 4—won the Lawrence Realization Stakes at Belmont Park, establishing a new world's record of 2 minutes, 40½ seconds for a mile and five-eighths. September 11—won the Jockey Club Stakes at Belmont Park, establishing a new American record of 2 minutes, 28½ seconds for a mile and a half; September 18—won the Potomac Stakes at Havre de Grace, establishing a new track record of 1 minute, 44½ seconds for a mile and one-sixteenth; October 12—won a match race from Sir Barton at Windsor, Canada, for a \$75,000 purse and gold plate valued at \$5000.

The winners of the more important racing fixtures in the United States in 1920 were:

Brooklyn Handicap, Cirrus; Saratoga Handicap, Sir Barton; Suburban Handicap, Paul Jones; Saratoga Cup, Exterminator; Futurity, Step Lightly; Latonia Derby, Upset; Kentucky Derby, Paul Jones; Brooklyn Derby, Man O'War.

J. Butwell was the leading American jockey. He had 536 mounts, finishing first 109 times, second 92 times, third 105 times, and was unplaced on 230 occasions. J. Rodriguez piloted 105 winners and finished second 113 times. The

most successful English jockey was S. Donoghue, who scored 122 firsts, 98 seconds, and 74 thirds. The leading English owner was Sir R. Jardine with \$91,510. Capt. G. Loder's Spion Kop captured the English Derby and Comrade, owned by M. E. de St. Alary, won the Grand Prix de Paris.

The Grand Circuit season comprised 310 races, 181 for trotters and 129 for pacers. Tommy Murphy and Fred Erdman were the leading drivers, each winning 30 events. Peter Manning was the largest individual winner with a total of \$26,550. This horse also set a new world's record for the best three heats at a mile, his times being 2:03, 2:02¾, and 2:02½. Single G. established a new world's pacing record by traveling three heats in 1:59, 2:00, and 2:00¾.

RACQUETS and COURT TENNIS. C. S. Pell captured the national amateur racquets singles, defeating S. G. Mortimer by scores of 9-15, 15-9, 15-2, 15-8. The doubles title went to Jay Gould and J. W. Wear who defeated C. S. Pell and S. G. Mortimer 15-9, 15-11, 9-15, 15-10, 16-18, 6-15, 15-7. Jack Soutar triumphed over Otto Glockler in matches for the American professional racquets championship by scores of 15-5, 16-5, 9-15, 15-10.

A. J. Cordier of the Yale Club, New York City won the national amateur squash championship, defeating Anderson Dana of the Crescent A. C. 17-15, 15-9, 15-3. Jay Gould again reigned supreme in the court tennis singles. The court tennis doubles honors were gained by Gould and J. W. Wear.

RADCLIFFE COLLEGE. A non-sectarian institution of the higher learning for the education of women, at Cambridge, Mass., founded in 1879. The enrollment for the regular fall session of 1920 was 614. The faculty numbered 133, who were instructors and professors of Harvard University. The productive funds amounted to \$1,900,000 and the income to \$90,000. There were 44,000 volumes in the library. President, LeBaron Russell Briggs, LL.D., Litt.D.

RADIO-TELEGRAPHY. See WIRELESS TELEGRAPHY AND TELEPHONY.

RADIO-TELEPHONY. See WIRELESS TELEGRAPHY AND TELEPHONY.

RADIUM, MEDICAL USES OF. It is not yet generally understood that radium may extend more hope for the mitigation of persistent high blood pressure and hardening of the arteries than any other of our resources. This is pointed out by Dr. Field, Director of the New York Radium Institute, in the *Medical Record* for Dec. 25, 1920. The title of his paper is "The Influence of Radioactivity in the Treatment of Hypertension." The greatest proved efficiency of radium is in the treatment of malignant disease (see CANCER) and here the metal acts as a surgical resource, a substitute for the knife. Its use here is sometimes styled radiosurgery. But there are also radiomedical possibilities, for gaseous radium, known as emanation, has all the virtues of solid radium and solutions are easily rendered radioactive. Radium has in fact been used medicinally from the outset but heretofore has done nothing that could not have been done as well or better by other means. Dr. Field is, however, quite sanguine as to the future of the metal in the field of persistent high blood pressure and arteriosclerosis, and believes that at least three-fourths of patients with these conditions can have their lives prolonged for many years. He believes that the drug will be as serviceable here as

it has been in cancer, which is saying much. There is considerable similarity between the two affections, for both often attack the robust subject who has never been ill and at about the same age period; and both come on insidiously. To the latter characteristic is due the admonition to have periodical examinations made while yet in health, and needless to state the case which is soonest discovered is usually the one to benefit most from treatment. Persistent high blood pressure is the forerunner of actual hardening of the arteries and the latter in turn precedes the degenerative diseases of the heart, kidneys, and the blood vessels themselves.

So commonly are these three types of degeneration associated in the same individual that we speak of cardiovascular disease as a pathological entity. The great liability of these subjects to cerebral apoplexy makes the brain a participant to some extent in this great complication of diseases. We know very little of the first causes of persistent high blood pressure. According to the author it is hardly encountered in the manual toiler, but this statement should be qualified because certain of the physical workers are predisposed to arteriosclerosis, depending on the amount and character of the work performed. It is true that sedentary lives and mental workers are menaced by the disease, especially those who, carrying burdens of responsibility, are under constant mental stress and who work for long hours at a stretch with neglect of exercise and with the habit of eating considerably more than their physical requirement. These subjects improve considerably under a radical change of habits—an active outdoor life and reduction in diet, with relief from mental strain.

Since radium stimulates most of the functions it is difficult to understand its exact rôle in relieving arterial disease. Recently it has been claimed that it exerts a direct action on the automatic activity of the heart beat. That it does relieve the symptoms of high tension and arteriosclerosis is readily apparent, and it is probable that if used in season the treatment may prove curative. If only a palliative the treatment will of course need renewing from time to time. Even with advanced organic disease of the heart and kidneys life can be prolonged and symptoms relieved.

The subject of administration is one of the greatest interest because radium is still scarce and the supply will hardly be equal to the constantly increasing demand. Used medicinally it exerts its influence in very small quantities, and even the minute amounts natural to certain mineral springs have given notable results.

In addition to the use of radioactive mineral waters, gaseous radium or emanation may be inhaled and baths may be taken in radioactive water. Radium element proper in solution may be injected beneath the skin or into the veins. The metal is given thus in one of its salts—bromide or chloride. The author has used radium element in this manner in nearly 3000 treatments and has never seen any toxic effects. The foreign substance is not retained in the body but is eliminated in the usual manner. Gaseous radium does not remain long in the body but radium element may be demonstrated in the latter for as long as 12 weeks. Dr. Field will not undertake cases unless the subject will remain under treatment for a maximum of 16 weeks. He obtains good results without coinci-

dent dieting and hygiene, although he advises that other measures be utilized along with radium. The worst symptoms such as headache and dizziness, pain in the cardiac region, insomnia, etc., disappear in a few days, while at the end of the treatment the blood pressure may show a reduction of from 15 to 44 mm. in cases originally 160 to 200 mm., the greatest reduction being naturally seen in the higher pressures. As a rule the patients remain well from 6 to 12 months at which juncture there may be a return of high pressure; if this is promptly treated the period of treatment may be reduced to two or three weeks. Relapses are apt to follow certain abuses like overeating. Subjects threatened with relapse should be able by means of right living and the use of some form of gaseous radium such as radioactive mineral waters to ward off or keep down the tendency. Many patients treated four years ago have been free from relapse.

RAILROAD TERMINALS. See CITY PLANNING.

RAILWAYS. The Transportation Act became a law on Feb. 28, 1920, and on March 1, 1920, the railroads which had been taken over by the United States government as a war measure Jan. 1, 1918, were returned to the private corporations that owned them. This Transportation Act was the enactment into law of certain parts of the Cummins bill originating in the Senate and the Esch bill originating in the House of Representatives, containing some provisions however, that were not in either bill and omitting many provisions that were in one or other of the bills. Its passage marked a distinctly new epoch in the history of regulation of American railroads. It provided for the termination of "Federal control" of railroads, the settlement of disputes between common carriers and their employees, and an amendment to the Act to Regulate Commerce of 1887.

The larger railroads of the country had been rented by the government from the private corporations that owned them and operated by officers appointed by the government and by employees paid by the government from Jan. 1, 1918, to March 1, 1920. The Transportation Act provided for relinquishment of this rental but for a guarantee to such private corporations as elected to accept it of a net revenue equal to government rental for six months—that is up to August 31st—on condition that any net earnings in excess of the amount of the rental should be turned over to the government. Nearly all of the railroad corporations accepted this guarantee, the more important exceptions being the Southern Railway, the Pere Marquette, the St. Louis Southwestern, the New York, Chicago, and St. Louis, and Long Island. It provided also for the funding of indebtedness of the carriers to the government for a period of 10 years at 6 per cent interest. This indebtedness was incurred by the carriers through the expenditure by the government of sums for additions and betterments to the property of the carriers and advances by the government of sums for the refunding of corporation securities maturing during the period of government operation.

The operating expenses of the carriers had been increased so much under Federal operation that with few exceptions the government was called upon to make up very considerable deficits for the six months period.

The Act created a Railroad Board of Labor Adjustment composed of nine members, three representing the employees, three representing the managements, and three representing the public, with salaries of \$10,000 each, to pass upon wages and working conditions. The findings of this board are to be made public but are not enforceable by law.

President Wilson on April 13th appointed the following nine men as members of the Railroad Labor Board:

Public representatives: G. W. W. Hanzer, assistant commissioner of the United States Board of Mediation and Conciliation; Henry Hunt, former mayor of Cincinnati; R. M. Barton, former member of the Tennessee Court of Appeals.

Management representatives: Horace Baker, former general manager of the Cincinnati, New Orleans, & Texas Pacific; J. H. Elliott, former general manager of the Texas & Pacific; W. L. Park, Federal manager of the Chicago Great Western.

Labor representatives: Albert Phillips, vice-president Brotherhood of Locomotive Firemen and Enginemen; A. O. Wharton, president Railroad Employees Department American Federation of Labor; J. J. Forrester, president Brotherhood of Railway and Steamship Clerks, Freight Handlers, and Express and Station Employees.

The Interstate Commerce Act is amended so as to provide that the Interstate Commerce Commission shall fix such freight and passenger rates as will provide the railroads as a whole with a net operating income equal to $5\frac{1}{2}$ per cent or 6 per cent on the fair value of the property devoted to transportation. Earnings by any railroad in excess of 6 per cent shall be divided, half to be retained by the railroad company as a reserve fund and half to go to the government for the establishment of a contingent fund. The commission is also given the power to fix minimum rates as well as maximum rates. The commission is given the power to pass on the division of through rates as between two or more railroads. Approval of the commission must be obtained for the issuance of new securities. The approval of the commission must also be obtained for the building of extensions and new facilities.

The Act provides that combinations of railroads may be formed subject to the approval of the Interstate Commerce Commission but that the combinations shall be carried out in such a way as to preserve existing competition. The commission is empowered to lay out a general plan for the combination of railroads and has interpreted this to mean that it shall lay out such a general scheme. It was working on this scheme at the end of 1920.

As indicative of the attitude of the commission towards this subject the handling of the application of the Delaware, Lackawanna, & Western is significant. The Lackawanna has for a number of years been paying 20 per cent dividends on its stock and earning a large surplus over and above its dividend requirements. The company claimed in its application to the Interstate Commerce Commission that the value of the property was many times (the petition does not fix an exact amount) the amount of the par value of the stock and asked permission to declare a stock dividend. At the same time permission was asked to merger another road—name not made public—with the Lackawanna. The commission has held

up both applications on the ground that this proposal may not coincide with the plan which the commission is making for the consolidation of all roads into various systems.

Another important application in regard to the capitalization of surplus was made to the commission in 1920 and has been left undecided. The Chicago, Burlington, & Quincy has outstanding 110,839,100 par value of stock of which 107,611,600 is deposited as collateral for an issue of joint bonds of the Great Northern and the Northern Pacific with a face value of double the par value of the Burlington stock. These 4 per cent bonds become due in 1921. The Burlington has been paying regular dividends of 8 per cent on its stock (just sufficient to meet the interest on the 4 per cent bonds under which it is deposited) and occasional extra dividends and has put back into the property very large surpluses. The proposal of the company is to issue additional stock against this surplus.

The question presented to the commission is interesting. The Transportation Act specifically provides that even where surpluses are earned by successful competition against other roads charging the same rates—that is rates fixed by the commission itself—this surplus above 6 per cent must be divided with the government. This applies however to surpluses under rates which by the new law are required to be high enough to yield at least 5½ per cent on the aggregate value of railroad property. The surpluses of the Lackawanna and the Burlington were earned in a period when there was no guarantee of minimum net earnings of all railroads except such as may be found in the Constitution.

As provided for in the Transportation Act the railroad companies made an application, on May 1, to the Interstate Commerce Commission for an increase in freight rates. It was estimated by the companies that an increase of 28 per cent in freight rates in Eastern territory and of 23.4 per cent in western territory would be necessary to yield in the aggregate 5½ per cent on the investment in their property. Before the hearing had gone far various classes of railroad labor appealed to the Labor Board for increase in wages. The two hearings went on simultaneously, but before different government commissions. It was necessary however for the Interstate Commerce Commission to make some estimate of what the new wage scale would be because to arrive at a figure for net income gross income must be adjusted to a presupposed expense. What actually happened was that there was some unofficial consultation between the two commissions and the Railroad Labor Board made its award on July 20 and the Interstate Commerce Commission made its award on July 29.

WAGE AWARD. The United States Railroad Labor Board awarded the various classes of employees a flat increase in wages averaging 21 per cent above the wages then being paid and adding \$586,340,336 to the annual pay rolls of the railroad companies making no allowance for increased rates of overtime. Clerks got an increase of 25 per cent, maintenance of way employees 25 per cent, mechanics and shop labor 19½ per cent, station agents and telegraphers 23 per cent, and engine men and trainmen, each 23 per cent. In making the award it was said that, "the board has endeavored to fix such wages as will provide a decent living and secure for the children of the wage earners opportunity for

education, and yet to remember that no class of Americans should receive preferred treatment and that the great mass of the people must ultimately pay a great part of the increased cost of operation entailed by the increase in wages determined herein."

The different labor unions representing railroad employees generally accepted the award, but it is of importance in the history of labor legislation to make a note of the fact that although the responsible leaders of the unions had agreed to await the decision of the Wage Board there were serious strikes of railroad employees while the hearings were going on. These strikes were called "outlaw" strikes by the labor leaders and it was claimed that they were without the sanction of the unions and were engaged in by members of the unions in defiance of their leaders. The argument, however, was continuously used before the Wage Board by the labor leaders—while these outlaw strikes were in progress—that unless the Wage Board granted the demands of the unions the leaders would no longer be able to control the action of the membership. The outlaw strikes started with the switchmen in Chicago, but spread to other classes of employees and pretty well all over the country. They died out in time, but so far as is known no punishment was imposed on the "outlaws" by the labor unions.

In the last four months of 1920 the supply of railroad labor for the first time since 1915 exceeded the demand and some reduction in forces was made possible by a falling off in freight business.

THE RATE ADVANCE. The Interstate Commerce Commission on July 29 granted a general increase in freight and passenger rates. The increase in passenger rates was 20 per cent above the 3 cents a mile fixed during government operations. To this there was added a surcharge of ½ a cent a mile for passengers riding in Pullman cars. The surcharge goes to the railroad company not to the Pullman Company.

The eastern roads were allowed an increase of 40 per cent in freight rates, the western roads east of the Colorado common points were given an increase of 35 per cent, the Mountain-Pacific roads were given an increase of 25 per cent and the southern roads were given an increase of 25 per cent. Both freight and passenger rate increases were to apply to both interstate and intrastate business, but some states were still withholding increased rates on intrastate business up to the end of 1920.

In making the award the Interstate Commerce Commission took as its tentative value of all the roads \$18,000,000,000, which is less by \$1,700,000,000 than the total of the property investment accounts of the railroads. The par or face value of all outstanding railroad securities roughly corresponds to the total of the property investment accounts so that the Commission tentatively accepted a valuation for the railroads lower by some 8 per cent than the face value of outstanding securities, but very far above the market value of the aggregate of these securities. The net operating income which the Commission found to be fair under 1920 wage and traffic conditions was \$1,134,000,000 per year. The Commission was unanimous as to the increases, but Commissioners Eastman and Woolley objected to the method of arriving at the decision.



Engineer J.C. Crowley oiling the 5015 before it starts to push a train up the ERIE'S Susquehanna Hill.

This is one of the 3 largest locomotives in the world, all owned by the ERIE Railroad. The 5015 weighs 432 tons and has 24 drive wheels; has pushed 250 loaded cars in a test.

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F. WING GALLOWAY, N.Y.

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EARNINGS AND EXPENSES. Julius H. Parmelee of the Bureau of Economics, writing in the *Railway Age*, says that in 1920 the American railways had, "the greatest traffic in railway history; the greatest operating revenues; the greatest operating expenses; the greatest wage aggregate; the greatest taxes, and the smallest net operating income in more than 30 years." The total operating revenues of all United States railroads, excluding the small companies that have less than \$1,000,000 a year each in revenues, is estimated at \$6,230,000,000. This compares with \$5,184,000,000 total revenues in 1919 and is an increase of 20.2 per cent over that year. Freight revenue in 1920 amounted to \$4,291,000,000, an increase over the previous year of 20.6 per cent. Passenger revenue amounted to \$1,317,000,000, an increase of 11.8 per cent. Mails, express, and miscellaneous revenue amounted to \$622,000,000 an increase of 38.5 per cent. The total freight traffic handled in 1920 was the equivalent of moving 448 billion tons one mile. This compares with 395 billion tons moved one mile in 1919, an increase of 13.4 per cent. The passenger business was the equivalent of carrying over 46 billion passengers one mile. This was about the same, or possibly a little less, than the passenger business of 1919. The figures for mail, express, etc., are not completed on a ton or pound basis so that the volume of business cannot accurately be compared with that of previous years. It will be noted that in both freight and passenger business a considerable part of the increase in revenues was due to increased rates and this was true also of revenue from mails. The increased freight and passenger rates in effect for four months in the year raised the total earnings from passengers and freight, but not to the extent that had been predicted during the rate case discussion partly because there was a falling off in all classes of freight and passenger business. Besides granting an increase in rates paid by shippers and travelers the Interstate Commerce Commission awarded the railroads an increase in the compensation which the government pays for carrying the mails. This increase was made retroactive for 1920.

Operating expenses of the roads earning more than \$1,000,000 a year amounted in total to \$5,750,000,000, an increase of \$1,330,000,000, or 30.1 per cent over 1919. The award of the Labor Board was retroactive to May 1, thus making eight months of increased wages. Fuel costs were considerably higher in 1920 than in 1919 and railway material costs were higher.

MAINTENANCE OF WAY. Two years of operation by the government—one of them under war conditions—had left the roads in bad shape physically. During 1918 the government had been unable to get all the rails that were needed and in 1919 labor was so scarce that even the rails which were bought were laid only at excessive cost. Furthermore, the standard which was made theoretically uniform for all roads was much lower than that in use in actual practice by the so-called strong roads that is, such roads as the Atchison, Topeka & Santa Fe, Pennsylvania, etc. Even in the first nine months of 1920 track labor was very scarce and demanded high wages. The railroad managers could not or thought they could not, raise the regular wage scale for track labor to the level of that for the same class of labor in other industries.

For instance the railroads in the Pittsburgh district were offering between 30 and 40 cents an hour for section men while the steel mills were paying 65 cents an hour. In Iowa the farmers were paying \$90 a month and board for labor and the railroads were offering 31 cents an hour or less than half the equivalent of what the farmer was offering. Where, as in the southwest, the roads use Mexican labor for track work, they were able to hold their forces because Mexicans do not as a rule make good farm hands. In other parts of the country, especially in the East, the experiment of contracting out maintenance of way work was tried. Whether this was a cheaper way of getting the work done is open to question, but it had two points at least to recommend it to railroad managers, it maintained on the railroad payroll the existing spread between skilled and unskilled labor wage scales and it nominally maintained a rate of about 30 cents an hour for railroad track labor which would be sufficient to attract labor when unemployment became general.

THE EQUIPMENT SITUATION. During the 26 months of government operation the rule which requires a car which is off the line of the railroad which owns it to be loaded for movement only in the direction of the home line was suspended and all cars were treated as common property of all roads. This had the effect of completely scattering all cars. For instance, let us take the case of the Pennsylvania R. R. steel open top coal car loaded with anthracite for domestic use in New Orleans. When the car was unloaded at destination it would have been held at New Orleans until a load was obtained north bound, or at least in the general direction of the Pennsylvania, or else it would have been hauled empty to the nearest point on the Pennsylvania under the car rules in effect before government operation. Treating this car as common property, however, the government would have loaded it with any freight that could be shipped in such a car and sent it possibly out to Arizona, over the Southern Pacific. It might then have gotten into mine run service at the copper mines. Under normal conditions the eastern roads, which have a large number of cars especially adapted to their own business, keep 80 per cent of their cars on their own lines and have other companies cars on their line to the number about equal to the 20 per cent of cars owned, but away from the home line. Under government operation this was just reversed and the proportion of owned cars on home lines to total cars owned fell as low as 10 per cent.

No railroad wants to repair the cars owned by other companies and this was especially true under government operation, because the officers of each road were very anxious to make a good showing on holding down expenses. One road making repairs to a foreign car could not bill the cost to the road owning the car even when the repair was necessitated by a defect in the car—as it could under private operation—and, therefore, had to charge the entire cost to its own expenses. The result was that all equipment was allowed to deteriorate to a greater extent than ever before in the history of the railroads.

When business resumed normal proportions and even in some industries something of the nature of a boom took place there was a severe

shortage of freight cars. This was partly because so many cars were unfit to run. There arose a demand that the government lend the railroad companies money to buy a large quantity of new equipment, both locomotives and cars. A majority of the railroad executives joined in this demand, notwithstanding the fact that the price asked by builders of equipment was two and one-half times the pre-war price in the case of locomotives and three times the pre-war price in the case of freight cars. The temptation to use unsound economic reasoning is strong. If a railroad repairs a car that is in bad shape the cost must be charged to expenses. Assume the cost is \$800 and there are 1000 cars that need repairs, then the railroad manager must face the fact that he adds to his expenses \$800,000, which is the same as subtracting this amount from the net income available to meet interest charges. On the other hand, if the company buys 1000 new cars with money borrowed from the government, there is no charge to expenses, the shipper is better satisfied, the unanalytical stockholder is satisfied, and the equipment manufacturer is delighted. On the other hand, there is a condition under which new equipment must be bought to meet the just demands of shippers. The majority of the railroad executives thought that that condition had been reached in March, 1920. The minority led by L. F. Loree, president of the Delaware & Hudson, thought that the car shortage could be almost entirely overcome by the repair of the cars already owned, as a matter of fact, business fell off so much in the last three months of 1920 that the programme of the majority was not fully carried out.

The price of locomotives and of steel freight cars is roughly proportionate to the weight. Thus, a locomotive weighing 320,000 pounds cost \$80,000 in 1920 whereas the average price in 1910-1914 was about \$30,000. The total number of locomotives ordered in 1920 by United States railroads according to the figures compiled by the *Railway Age*, was 1771 and by industrial companies 227, and by Canadian roads 189, and by foreign countries 718; a total of 2905. This compares with total orders in 1919 of 1170 and in 1918 of 4888. The total number of locomotives built in the United States in 1920 was 3439.

The total number of passenger cars ordered by United States railroads, the Pullman, and other companies, was 1781, and by Canadian roads 275, and by foreign countries 38; a total of 2094. The total in 1919 was 782 and for 1918 it was 157. In the 10 years before the war it varied from 3000 to 4000 per year.

The United States railroads ordered 52,294 freight cars, private car companies and industrial companies 31,913, Canada 12,406, and foreign countries 9056; a total of 105,669 ordered from American and Canadian builders in 1920. In 1919 the total was 163,185.

NEW CONSTRUCTION. There was 314 miles of new first track built in the United States in 1920. In addition there was 91 miles of second track, less than two miles of third track, and less than eight miles of fourth or other track built. In Canada there was 306 miles of new first track and 32 miles of second track built. The mileage of new first track was less than half as great as that of 1919 which was the lowest figure heretofore reached since a record of

railroad construction had begun to be kept. The new lines built in 1920 were all short extensions from half a mile to 10 miles in length, most of them to new mines. The mileage of lines abandoned in the United States was 535, and in Canada 35.

RECEIVERSHIP AND FORECLOSURE SALES. There were 10 short roads with a total mileage of 541 miles that were placed in the hands of receivers. There were seven short roads with a total mileage of 380 sold under foreclosure. The Denver & Rio Grande was ordered sold and a sale took place on November 20, but had not been confirmed up to January, 1921.

RAILWAYS, ELECTRIC. No new work in the electrification of steam railways was undertaken during the year. The completion of the Pacific Coast extension of the Chicago, Milwaukee and St. Paul Railway to Seattle, Washington, gave that line a total of 651 miles of track operated by electric locomotives. These engines, one design of which was illustrated in the 1919 YEAR BOOK, were giving highly satisfactory service over the steep grades of the St. Paul's mountain divisions. The regenerative braking apparatus, by which the momentum of the train while descending grades was employed to check its speed, functioned so perfectly that the air brakes were not used in controlling the train. This result was accomplished by such an arrangement of the armature and field connections of the motors that the latter were converted into generators and a large part of the energy thus developed in them was restored to the line as an electro-motive force opposed to that from the power station.

In Europe, the St. Gotthard railway between Lucerne, Switzerland, and Chiasso, Italy, was operated by alternating current electric locomotives, energy being supplied from an overhead conductor at 15,000 volts to the single-phase motors of the locomotives. In Australia, the system of suburban tramways radiating from the city of Melbourne was practically completed during the year and a large and increasing passenger traffic was successfully handled. In France, the Midi Railway extended the use of multiple unit electric trains on part of its system, and from Italy it was reported that extensive plans were under consideration that would soon entirely replace steam locomotives with electrics in that country.

Electric railways, both street and interurban were going through a difficult period of their existence. Labor and material costs were rising, and while the increased fares urgently asked for by the companies were granted in many localities, the relief so obtained was insufficient to strengthen their credit to the point where funds could be borrowed on terms enabling extensions or even necessary betterments to be made. In New York City, the surface lines as well as the elevated and subway roads continued their fight for an increased fare and were backed by a moderately expressed public sentiment, but the Board of Estimate and the State Legislature stoutly opposed all efforts looking to the improvement of their financial condition. At the close of the year, the Interborough Rapid Transit Co., operating subway and elevated lines experienced great difficulty in making arrangements to pay interest due on its obligations. These lines, during the year ending Dec. 31, 1920, carried 1,006,331,698 passengers, of whom 625,521,692

were carried on the subway. The American Electric Railway Association published a compilation of figures showing that the electric railways of the United States represented an investment of more than \$5,000,000,000 and they urgently needed \$300,000,000 for their proper rehabilitation.

In many cities, the competition of jitney buses made severe inroads on the earnings of the trolley lines and while in exceptional cases they were valuable feeders to such railways, their irresponsible and unregulated operation and service were frequently a source of annoyance to the public as well as to the street car lines. Accidents were frequent and injured passengers found great difficulty in securing redress through the courts. The service was unreliable and subject to more inconvenience and discomfort than confronted passengers using the regular means of street transportation. In New York City, the Fifth Avenue Coach Company demonstrated its value to the public and was constantly increasing its facilities to enable it to care for its patronage. Though charging a 10-cent fare, its business increased rapidly. Street railway managers in general were looking to the wider use of the one-man car (see RAILWAYS, ELECTRIC, 1919 YEAR BOOK) as the solution of some of their difficulties and were beginning to win public favor in connection with their financial needs, as was evidenced by a more friendly tone in the comments on their situation in the daily press.

killed in train accidents in 1919, 517, was 48 per cent less than the total in 1918; but in the earlier year were included under this head of "other persons, not trespassers" killed at highway grade crossings. Those thus classed in 1919 numbered nine, whereas in 1918 the number was 117. Considering only the passengers and employees (including employees not on duty) the decrease in 1919 over 1918 was 43 per cent. The number of employees on duty killed in train accidents (359) was 34 per cent less than in 1918. In connection with the decrease in the number of passengers killed in train accidents it should be remembered that the statistics for 1918 included two of the worst railway disasters on record; at Ivanhoe, Ind., on June 22, 1918, killing 68 persons, and Nashville, Tenn., on July 9, 1918, killing 101.

The grand total in the accompanying table, 6978 killed added to 149,053 injured or 156,031 was the smallest recorded for the railways of the United States since 1910; and the total of killed was the smallest since 1898. A notable feature of the 1919 record was the decrease in the number of trespassers killed by being struck or run over by trains. For the 10 years 1905-14 the average annual number of trespassers killed (including those killed in train accidents) was 5290, as compared with 2553 in 1919. The largest annual death roll of trespassers, 5612, was that for the year ending June 30, 1907.

The economic waste due to the many losses

CASUALTIES TO PERSONS IN TRAIN ACCIDENTS AND TRAIN SERVICE ACCIDENTS; THREE YEARS

(Interstate Commerce Commission Accident Bulletin No. 74, 1920)

	1919		1918		1917	
	Killed	Injured	Killed	Injured	Killed	Injured
Passengers—						
In train accidents	110	4,549	286	4,655	131	4,460
In train service accidents	191	3,598	233	3,427	212	3,914
Total	301	8,147	519	8,082	343	8,374
Employees on duty—						
In train accidents	359	2,955	547	4,179	439	4,214
In train service accidents	1,334	83,325	2,212	42,782	2,177	48,022
Total	1,693	36,280	2,759	46,961	2,616	52,236
Total passengers and employees on duty ..	1,994	44,427	3,278	55,043	2,959	60,610
Employees not on duty	66	321	169	595	165	544
Other persons, not trespassing—						
In train accidents	9	61	117	433	109	478
In train service accidents	1,873	5,134	1,878	5,268	2,091	5,514
Total	1,882	5,195	1,995	5,701	2,200	5,987
Trespassers^b—						
In train accidents	32	63	39	67	68	76
In train service accidents	2,521	2,595	3,216	2,738	4,175	3,753
Total	2,553	2,658	3,255	2,805	4,243	3,829
Total of the above^c	6,495	52,601	8,697	64,144	9,567	70,970
Non-train accidents	483	96,452	589	110,431	520	123,835
Grand total	6,978	149,053	9,286	174,575	10,087	194,805

^a Includes persons struck by trains at highway crossings. ^b A small percentage of the persons classed as trespassers represents employees. ^c Of the 52,601 persons here recorded as injured, 502 were reported by the railroads as having subsequently died.

RAILWAY ACCIDENTS. In the United States the Interstate Commerce Commission in its annual record of collisions, derailments, and other accidents on the railroads of the United States compared with a record for 1918 of 286 passengers, 366 employees, and 41 other persons killed in train accidents, and 4549 passengers, 3202 employees, and 124 other persons injured; as compared with a record for 1917 of 286 passengers, 554 employees, and 156 other persons killed and 4655 passengers, 4250 employees, and 500 other persons injured. The total number of persons

involved in American train accidents may be appreciated by reference to the table on page 572 for the years 1919 and 1918. It must be realized that the amount of damage to freight or the sums paid or payable on account of bodily injury to persons is not included in the totals given. The table also classifies the nature of the train accidents.

One serious feature to which attention is called by the Interstate Commission is that while the number of trespassers killed and injured showed a large reduction, the number of persons killed

or injured at highway grade crossings in 1919 was more than double the number in 1910. Since 1911 the number of persons killed had been more than 1000 each year; and the totals for 1919 were 1784 killed, and 4616 injured.

ice employees were at fault for 7 of these collisions, while the other was due to the failure of an operator to deliver a train order, and of the despatcher to observe a rule governing the issuance of meet orders.

TRAIN ACCIDENTS			1919		1918			
	No.	Damage ^a	Persons ^a			Persons ^a		
			Killed	Injured	No.	Damage ^b	Killed	Injured
Collisions	6,904	\$5,697	238	3,931	8,715	\$6,811	499	4,431
Derailments	15,897	15,572	175	2,979	13,568	12,923	290	3,978
Locomotive accidents	674	495	43	261	514	346	42	363
Miscellaneous	2,121	912	29	441	1,898	874	126	566
Total	25,596	\$22,676	485	7,612	24,695	\$20,954	957	9,338
^a Excluding trespassers.		^b In thousands.						

^a Excluding trespassers. ^b In thousands.

During the year ended June 30, 1920, the Bureau of Safety of the United States Interstate Commerce Commission investigated 90 train accidents, which included 58 collisions and 32 derailments. The collisions resulted in 179 deaths and 1158 injuries, and the derailments resulted in 60 deaths and 481 injuries, a total of 239 persons killed and 1639 persons injured.

Thirty-one of these collisions occurred on lines operated by the block system; 20 occurred on lines operated by the time-table and train-order system, and 7 were yard accidents.

Of the 31 collisions investigated in block-signal territory, 20 occurred on lines equipped with automatic block-signals, of which 14 were rear-end collisions, 5 were head-end collisions, and 1 was a side collision. The same question of human failure again was encountered for of the 20 collisions occurring in automatic block-signal territory, 16 were due directly or indirectly to the failure of enginemen properly to observe and obey signal indications: 1 was caused by a despatcher authorizing a movement against the current of traffic without knowing whether opposing trains were being held and by a yard clerk allowing an opposing train to proceed; 1 was due to a closed angle cock on the rear of the tender; 1 to the failure of a conductor to see that a sufficient number of hand brakes were set to hold the portion of his train left standing on a mountain grade; and 1 to the air brakes not being in proper working order through lack of adequate inspection and test.

Likewise of the 16 collisions investigated in automatic block-signal territory in which enginemen were involved either directly or indirectly, 10 were due to failure of enginemen to observe or obey stop signals, all of which might have been prevented by an adequate automatic train-control system.

The 11 collisions in non-automatic block-signal territory consisted of six rear-end and five head-end collisions. Five of these accidents were due to the failure of enginemen to operate their trains under proper control in occupied blocks. Enginemen were also primarily responsible in three other instances. One of these collisions was due to a flagman being authorized to proceed against the current of traffic without utilizing the safeguards provided by rule, and one to the failure of a despatcher to deliver to one of the trains an order which changed a meeting point, resulting in a lap order.

The 20 collisions occurring on lines operated under the time-table and train-order system consisted of 6 rear-end collisions, 13 head-end collisions, and 1 side collision. Errors in handling or failure to obey train orders were responsible for 8 of the rear-end collisions; train serv-

Track conditions were involved in 15 of the 32 derailments. Four derailments were due to broken rails and four to open switches, three of which were opened with malicious intent. One derailment was due to a defective switch, one to insufficient ballast, one to excessive speed in view of existing superelevation, one either to an obstruction or excessive speed in view of existing superelevation, and three to a combination of track and equipment defects. Of the remaining 17 derailments, 8 were due to defects of equipment, 3 to obstructions, 2 to excessive speed, 1 to running off a derail, and 1 to the failure of an engineman to note an open draw-bridge, while the causes of 2 derailments were not ascertained.

The work of the Bureau of Locomotive Inspection of the Interstate Commerce Commission during the fiscal year ended June 30, 1920, is shown in the report of the chief inspector.

The summary of all accidents and casualties occurring during the fiscal year ended June 30, 1920, covering failures of the entire locomotive and tender and all of their parts and appurtenances, as compared with the year ended June 30, 1919, given in the annual report of the chief inspector of the Bureau of Locomotive Inspection of the Interstate Commerce Commission showed an increase of 49 per cent in the number of accidents, an increase of 16 per cent in the number killed, and an increase of 42 per cent in the number injured. This increase was due almost wholly to disregard of the requirements of the law and rules, as well as of safety of construction and operation. This was especially true with respect to parts sometimes considered unimportant; for example, 26 per cent of the increase in accident and injuries was due to failure of grate shakers; 10 per cent was due to failure of reversing gear; and 10 per cent to failure of squirt hose.

The summary of all accidents and casualties caused by failure of the boiler and its appurtenances only for the fiscal year ended June 30, 1912, the first year of the existence of the law, as compared with the year ended June 30, 1920, showed a decrease of 47 per cent in the number of accidents, a decrease of 48 per cent in the number killed, and a decrease of 49 per cent in the number injured.

BRITISH RAILWAY ACCIDENTS. 1919. The annual accident report for the railways of Great Britain previously compiled in the office of the secretary of the railway department of the Board of Trade, in 1920 was prepared by the chief inspecting officer, Col. J. W. Pringle, reporting to the Director General, Public Safety, and General Purposes Department of the Ministry of Transport. It stated that train accidents on the

railroads of Great Britain and Ireland in the year 1919 numbered 1278, consisting of 292 collisions, 527 derailments and 459 other accidents. The fatalities involved in these accidents 3 passengers, 7 employees and 8 other persons killed, 513 passengers, 114 employees and 30 other persons injured; a total of 18 killed and 657 injured. A railroad mileage of 26,724 miles was involved and this must be considered in any comparison with the statistics of other countries.

In "train service" accidents 83 passengers, 318 employees and 426 other persons were killed, and 1835 passengers, 3845 employees and 217 other persons were injured. In "non-train" accidents 12 passengers, 52 employees and 23 other persons were killed, and 429 passengers, 16,489 employees and 445 other persons were injured. The totals of the three classes aggregated 932 persons killed and 23,983 injured. There were eight passengers killed in train accidents in 1918.

RAINFALL. See METEOROLOGY.

RALEIGH, Sir THOMAS. British public official and university professor, died at Oxford, February 8. He was born in 1850, received his early education at Edinburgh, then studied in Germany and finally graduated at Oxford where he won a prize for an historical essay. He was called to the bar in 1877, but gave up the practice of law and in 1884 became a fellow of All Souls at Oxford. In 1899 he accompanied Lord Curzon to India as regent member of the Vice-Regal Council, and in 1900 he was appointed Vice-Chancellor of the Calcutta University. On his return to England he served as member of the Council of India from 1909 to 1913. He wrote, *Elementary Politics* (1886); *An Outline of the Law of Property* (1889).

RAMSAY, Sir JOHN GEORGE. British soldier and civil servant, died March 31. After 1911 he was agent in Baluchistan. He was born Dec. 5, 1862, and went into the Indian Civil service at an early age. In 1893 he became political agent and he was revenue commissioner at Baluchistan, 1898-1906 and political resident in Turkish Arabia, 1907-10.

RAPID TRANSIT. Urban and interurban transportation continued throughout 1920 to be a leading topic as increased cost of operation and lack of funds for equipment, construction, and extension, were universal conditions throughout the United States. At various points there were strikes, elsewhere lines went into the hands of receivers, or were abandoned entirely, and everywhere there was uncertainty or controversy. In New York City, for example, there was a distinct lack of harmony between the municipal authorities and the Interborough Railway Company operating one of the great systems, and the receiver appointed by the United States district Court to operate the Brooklyn Rapid Transit lines. The question of increased fare figured here as it did elsewhere, and much of the discussion and dispute failed to consider fundamental facts. The limits of cost for a five cent fare in many cities long since had been reached, though the citizens clung to this time-honored standard often unmindful of greater costs of operation and increased length of journey made possible by extensions and systems of transfers not contemplated at an earlier date. The financial conditions of the year did not render easy the promotion of new enterprises often sorely needed, and even municipal construction was held back where badly required for the natural

growth of congested communities where more and more concentration was taking place. Various experiments of government ownership, or operation during war times had not been such as to further the demand for municipally owned and operated railways, and while these continued such advocacy yet the general movement had not gained in force.

FEDERAL ELECTRIC RAILWAY COMMISSION. An interesting development of the year was the report submitted on July 28, 1920, by the Federal Electric Railway Commission appointed by President Wilson on May 31, 1919, acting on suggestions made by the Secretaries of Commerce and Labor, to investigate the street railway situation. This Commission was composed of eight representatives of different organizations as follows:

Charles E. Elmquist, president and general solicitor of the National Association of Railway & Utilities Commissioners.

Edwin F. Sweet, Assistant Secretary of Commerce.

Philip R. Gadsdon, representing the American Electric Railway Association.

Royal Meeker, Commissioner of Labor Statistics, Department of Labor.

Louis B. Wehle, general counsel of the War Finance Corporation, representing the Treasury Department.

Charles W. Beall, representing the Investment Bankers' Association of America.

William D. Mahon, president of Amalgamated Association of Street & Electric Railway Employees of America.

George L. Baker, Mayor of Portland, Oregon, representing the American Cities' League of Mayors.

The report of the Commission, submitted July 28, was published in full in the *Electric Railway Journal* of August 28. This report recognized that the electric railway industry as it was in 1920 was without financial credit, and was not properly performing its public function. It recognized that this condition was the result of early financial mismanagement and economic causes, accentuated by existing high price levels of labor and materials, and of the failure of the uniform unit fare of five cents, prescribed either by statute or by local franchise ordinances or contracts to provide the necessary revenues to pay operating costs and to maintain the property upon a reasonable basis. It believed that the industry could be restored to a normal basis only by the introduction of economies in operation, improving its tracks, equipment, and service, and securing a reasonable return upon the fair value of its property used in the public service when honestly and efficiently managed.

It was realized that the electric railways must expand to meet the growing needs of their communities; therefore, the first essential was to restore credit in order to obtain necessary new capital for the extension and improvement of service.

The committee further stated that the full co-operation of labor was essential to the highest prosperity and the usefulness of the industry. The employees engaged in this occupation should have a living wage and humane hours of labor and working conditions. They should have the right to deal collectively with their employers, through committees or representatives of their own selection. All labor disputes should be set-

tled voluntarily or by arbitration, and the award of such a board should be final and binding upon both parties. It was intolerable that the transportation service of a city should be subject to occasional paralysis, whether by strikes or by lockouts.

The report also recognized that there could be no satisfactory solution of the electric railway problem which did not include the fair valuation of the property employed in the public service, and where that was done, the companies should voluntarily reduce any excessive capitalization to the basis of such value.

It referred to the fact that cost-of-service contracts were in the experimental stage, but where tried, they seemed to have secured a fair return upon capital, established credit, and effected reasonably satisfactory public service. Such contracts may safely be entered into where the public right eventually to acquire the property is safeguarded.

While eventually it might become expedient for the public to own and operate electric railways, the Committee stated that there was nothing in the experience thus far obtained in this country to justify the assertion that it would result in better or cheaper service than privately operated utilities could afford if properly regulated.

Public ownership and operation of local transportation systems, whether or not it be considered ultimately desirable, was recognized at the same time practicable in so few instances because of constitutional and statutory prohibitions, financial and legal obstacles, the present degree of responsibility of our local governments, and the state of public opinion, that private ownership and operation must as a general rule be continued for an extended period.

Another interesting report of the year was that of The American Electric Railway Association, on the condition of the electric railway industry throughout the country in 1920. In this there was a hopeful note with indications of a gradual and steady approach to a stable basis. It also recognized that regulatory bodies, recognizing that fair rates of return were essential to the maintenance of good service, had steadily ordered relief throughout the country; and, also, such agencies were aware that rehabilitation of lines would be a slow process and that at least the present advanced rates must be maintained for some time even if falling costs, anticipated but not realized as yet, should come. Badly needed improvements had been deferred by virtually every company.

The report showed that 548 cities, representing more than 90 per cent of the riding population in cities, were paying fares ranging from five cents with a one-cent charge for transfers, to a flat rate of 10 cents. One hundred and twelve cities paid a 10-cent fare. Electric railway receiverships were not so numerous. There were only 16 in 1920, representing a total capital stock of \$25,313,655, as compared with 48 receiverships, representing a capital stock of \$221,259,354, in 1919. During the year 450 miles of track were dismantled and 308 miles of track abandoned.

From every part of the United States the reports coming to the American Electric Railway Association showed not only regulatory bodies but car riders generally were taking the greatest interest in the restoration of companies to a

healthy state. The inclination to prevent companies from receiving sufficient return to maintain good service was in the belief of the Association confined to a small number of persons.

NEW YORK. The annual report of John H. Delaney, Transit Construction Commissioner, for the fiscal year ended June 30, 1920, showed that during 1920 there was an unprecedented increase in the traffic of the rapid transit and street car lines operating in the City of New York. The number of passengers in 1920 as compared with those of the preceding year were as follows:

	1920	1919
Rapid transit railroads*	1,424,166,581	1,204,266,664
Surface lines	940,608,486	875,676,340
Total	2,364,775,067	2,079,943,004
Increase	284,832,063	104,430,815
* Including Hudson and Manhattan tubes.		

In other words there was an increase of approximately 220,000,000 passengers in the rapid transit traffic during the fiscal year 1920, of which all but 9,000,000 of the increase were carried in the subway and elevated lines, making up the Dual System in which the city had a large financial interest. Traffic on the Interborough increased from 461,147,058 in 1919 to 586,098,633 in 1920, or an increase of 27.1 per cent while the Brooklyn Rapid Transit System which had transported 308,879,791 passengers in 1919 increased to 376,782,635 in 1920, or an increase of 21.98 per cent. On the elevated lines traffic increased 15.99 per cent and on the Hudson and Manhattan Tubes 7.21 per cent or about 9,000,000. Traffic on surface lines in Manhattan decreased 5.71 per cent and in Richmond 4.96 per cent. In Brooklyn and the Bronx travel on the surface lines increased. The total increase of passenger travel in 1920 over the increase in 1919 was approximately 175 per cent.

"With an annual increase in traffic exceeding 10 per cent," stated Mr. Delaney in his report, "it is obvious that provision must be made without delay for extension of local transit facilities for all sections of the city. When the Dual Contracts were signed in 1913 the rapid transit lines carried 810,000,000 passengers for the 12 months immediately preceding the adoption of the new programme. There has been an increase of approximately 615,000,000 passengers, or 76 per cent, in the intervening seven years, and the new trunk lines are already showing congestion."

In August, 1920, a report was made on a comprehensive plan intended to meet the requirements of the various boroughs of the city for the ensuing 25 years. The object of the plan was to encourage municipal growth in every direction and to prevent abnormal and congested conditions in certain sections and strangulation of growth in other areas. The transit plan and the general city plan for new thoroughfares and highway improvement involved mutual coördination in order that the best results might accrue to the general public. The growth of traffic per annum it was pointed out had been constantly in excess of the annual per capita growth of the city.

The enlarged system as projected would provide for an annual traffic of 5,000,000,000 passengers. The report recommended the doing away with surface car operation either on the main arteries of travel or on the main cross streets of Manhattan Borough, and stated that surface passenger transportation must be by subway travel

with crosstown "tie-lines" operated on a moving platform device, shuttle cars or by omnibuses. Because of the fact that the congested section of Manhattan had but 11 north and south through traffic arteries to serve more than 150 cross streets, it would be necessary to resort to "double-deck" subway trunk lines in the central traffic arteries of the city that remain available for transit lines.

It was suggested that the proposed scheme should not be carried out in its entirety but that it should be proceeded with methodically and continually. At pre-war prices it was estimated that the lines contemplated in the suggested programme for the next 25 years would cost approximately \$175,000,000 for construction. At prices prevailing in 1920, however, this cost would amount to close to \$350,000,000, exclusive of equipment, interest during construction, engineering, and superintendence. For proper facilities and equipment an additional \$200,000,000 would probably be required at present price level.

The plan in its entirety involved the construction of 21 two-track sub-aqueous tunnels, 830 single track miles of new line, three crosstown moving platforms, and two-story subways of eight and six tracks. An abstract of the report of D. L. Turner, chief engineer, in which this project is proposed may be found in *Engineering News-Record* for Oct. 14, 1920, Vol. 85, No. 16, page 754. This discussed in detail the proposed new routes and gives maps.

As regards actual construction during 1920, the New York City rapid transit system was increased by the completion and placing in operation of 55.38 track miles which served to bring the grand total of elevated and subway lines in operation to 601.2 miles out of a total of 618.9 miles projected for the entire dual system as laid out. Of the year's increase 40.56 miles were extensions of the Interborough System, and 14.82 miles were extensions of the New York Municipal System. The extensions opened in 1920 involved an outlay of \$67,150,000 and were as follows:

	Cost
Eastern Parkway, Brooklyn	\$15,250,000
Livonia Avenue, Brooklyn	2,500,000
Nostrand Avenue, Brooklyn	7,250,000
Westchester-Pelham Bay, Bronx	5,750,000
White Plains Road, Bronx	650,000
Webster Avenue, Bronx	2,750,000
Malbone Street, Brooklyn, to Whitehall Street, Manhattan	22,750,000
Sixtieth Street, Manhattan to Queens Plaza	9,250,000
Culver Line, Avenue X to Coney Island ..	1,000,000
	\$67,150,000

There were located on these newly opened sections of the dual system 43 passenger stations with a daily average passenger traffic of 350,000 persons. Furthermore at the time of the strike on the Brooklyn Rapid Transit, New York Municipal Railway, the Eastern Parkway and Nostrand Avenue section of the Interborough, then recently opened, prevented an entire paralysis of transportation in Brooklyn. It was stated that within 10 days of the opening of the Interborough extensions in Brooklyn they were handling a daily traffic of approximately 240,000 passengers.

The completion of the lines referred to above meant that practically all of the rapid transit lines under construction, with the exception of the 14th Street-Eastern Brooklyn line had been placed in public service. The needs of the Borough of the Bronx had been fully met, and

the New York Municipal system had been extended to Queens. Throughout the five boroughs a five-cent fare service had been established though actual operation on this basis was quite a different matter.

In addition to the record of construction and completion, plans and preparations were being made for rapid transit work to be placed under way or put into operation in 1921 under the provisions of the dual contract. This was as follows:

	Route mileage	Track mileage
<i>Interborough Lines</i>		
Steinway tunnel extension to Times Square	0.38	0.76
<i>New York Municipal Lines</i>		
14th Street-Eastern line:		
Subway	3.88	8.04
Elevated	3.40	7.10
Total	7.28	15.14
Nassau Street line	1.00	2.00
Total	8.66	17.90

The extension of the Steinway tunnel planned was to run from its existing terminus at Park Avenue and 42d Street west under 42d Street to a point west of Fifth Avenue, whence the tunnel would pass diagonally under Bryant Park to 41st Street and Sixth Avenue, and thence under 41st Street to a point midway between Seventh and Eighth avenues. There were to be stations under Fifth Avenue and under 41st Street below the stations of the New York Municipal Broadway line and the Interborough West Side line. The 14th Street-Eastern Parkway line construction suffered during 1920 by a default of the contractor on the section under contract between Irving Place and Avenue B in Manhattan. The under river section between the foot of 14th Street, Manhattan and Seventh Street, Williamsburgh, was scheduled for completion in the spring of 1921, while two subway sections in Brooklyn were to be finished about the same time.

Plans were under way for beginning the construction of the section under Nassau Street, Manhattan, connecting the terminal under the Municipal Building at City Hall, Manhattan, with the Montague Street tunnel to Brooklyn. This was believed to be the most difficult and expensive rapid transit construction ever to be undertaken and the cost of the mile was estimated at from \$8,000,000 to \$10,000,000 exclusive of the real estate required for the location of proper station facilities. Here the alternative was presented of encroaching upon the foundations of existing buildings or of building the two tracks on different levels with a double deck station at Fulton Street and a double island station at Broad and Wall streets.

At the end of 1920 the City of New York and the two operating companies had an investment of approximately \$435,000,000 in the construction and equipment of the rapid transit lines included in the dual system. Of this amount the city had invested \$215,000,000 for construction, real estate, and interest charges. This outlay was exclusive of \$57,000,000 invested by the city in the original subway.

As a result of considerable controversy with the street railways on Staten Island leading to their shut down earlier in the year the City of New York began on Dec. 2, 1920, municipal operation of 28 cars on that portion of the electric street railways of Richmond Borough known as

the Midland lines. The company owning the lines shut them down in January, 1920, because it could not get an increase of fares above five cents. The city intended to charge the former fare of five cents a ride.

CHICAGO. One of the projects proposed by the Chicago traction commission was an 18-mile subway system to begin in the business district and extend west under Madison Street to Ashland Avenue, where the lines would diverge to the northwest and southwest sections, with loop terminals at Lawrence Avenue and 63d Street respectively. Plans for this subway had been prepared by G. W. Jackson, engineer for the commission.

BOSTON. Problems of fare and operation continued during 1920. In the second report of the public trustees of the Boston Elevated Railroad it was stated there was no prospect for any immediate reduction from 10 cents as the basic flat fare. For the 12 months ended Dec. 1, 1920, the cost of service exceeded receipts by \$595,155, while during the preceding 12 months ended Nov. 30, 1919, the cost of service had exceeded receipts by \$2,585,137.

"The actual cost of operation from July 1, 1920, to Dec. 1, 1920, covering the first five months of the third year of operation by the trustees exceeded receipts by \$579,012," stated the report. "It is known, however, that the results of operation in December will show a substantial profit which, taken with the numerous offsetting credits to be made by adjustment in closing the books for the year, will very materially reduce previous losses." A total of 335,526,561 passengers was carried in 1920, as compared with 324,758,685 in 1919.

PHILADELPHIA. The engineers of the Philadelphia Department of Transit during the year were making specific application of experiences derived from the construction of the Frankford elevated line and the earlier Market Street line in the design of the Woodland Avenue elevated railway of the Darby line. In this extension a number of changes from previous practices were made. On account of the heavy cost of placing the entrances inside the block area as was done with the earlier Frankford line it was decided to place the station entrances of the Woodland Avenue line on the sidewalks, which on that street were 18 feet wide, and it was intended to build mezzanine floor stations having fare-collector booths and other public facilities on a floor intermediate between the street and the track floor. This type was not only low in first cost and economical in operation, but one fare collector could serve traffic in both directions during slack hours.

As the wider sidewalks of Woodland Avenue made side columns unobjectionable, it was decided to use the ordinary and more desirable bent construction with transverse main girders carried by columns at the curb line instead of single column bent. Furthermore ballasted solid-slab deck construction was to be used in general on the Woodland Avenue line "to give a high grade of street protection against dirt and noise, with economy of expenditure." In front of station platforms, and at one or two other points, the track was to be of subway type, with rails carried on short wood blocks embedded in concrete; to give economy in maintenance. The concrete deck in either form of construction was to consist of small arches carried on transverse steel

beams, with concrete curb along either edge to retain the ballast.

DETROIT. The public approval of a \$15,000,000 bond issue on April 5, 1920, for a Detroit municipal street railway system, was followed by the calling for bids on about 20 miles of street railway tracks, including excavating, concrete foundation, ties, rails, and all track equipment.

During the year work was begun on the Charlevoix-Buchanan cross-town line. The new lines were intended to supply at least a part of the much needed east and west crosstown service, and to relieve traffic in the congested factory districts as well as overcome the necessity for passengers going down town to the City Hall to transfer to other parts of the city. The conditions of the contracts provided for the work and materials to be let under three classes, (1) foundation work which comprises excavating, concrete foundation, tile draining and crushed stone backfilling; (2) oak ties; and (3) steel work, including all the required steel from rails to spikes. T-rails weighing 91 pounds per yard were specified. The main quantities involved were 95,080 cubic yards of excavation, earth or other material; 115,230 square yards of 8½-inch concrete foundation; 6665 cubic yards of ½-inch crushed stone backfill; 55,000 oak ties; and 4400 tons of steel rails.

This great Detroit project brought out the important fact that the State of Michigan apparently had no legislation contemplating public ownership of such a utility as the city proposed to construct, and the Michigan Public Utilities Commission requested from the Attorney General an opinion regarding its powers with regard to the project. There were in controversy the subject of various safety devices and other matters and it was the general opinion that the law did not provide the commission with power to direct a municipality constructing its own lines to pay the charges that might otherwise be assessed against a private company. See CITY PLANNING.

RATTIGAN, A. B. British jurist, died, January 11. He was born Oct. 11, 1864; educated at Oxford and was called to the bar in 1888. He was for a long time in judicial service in India and after 1909 was judge of the Chief Court in the Punjab. He wrote *Law and Divorce in India*, and edited the *Digest of Customary Law of the Punjab*.

RAWNSLEY, CANON (HARDWICKE DRUMMOND RAWNSLEY). British author, died in Westmoreland, England, May 28. He was born in 1851 and educated at Oxford, where he distinguished himself in athletics. He took orders in 1875 and became the Vicar of Wray three years later. He was a leader in the movement for the preservation of places of historical interest and natural beauty. As to his literary work, it included numerous and varied publications among which may be mentioned: *Sunset at the English Lakes*; *Literary Associations with the English Lakes*; *Edward Thring*; *Ballads of Brave Deeds*; *Memories of the Tennysons*; *Ruskin and the English Lakes*.

READING, ENGLAND. See SEWERAGE AND SEWAGE PURIFICATION.

RECLAMATION. General readjustment of industrial and financial conditions has been so nearly world-wide that little land reclamation was undertaken in 1920. High prices of labor and supplies operated to prevent such work in the earlier part of the year, and later falling

prices of agricultural products discouraged attempts to develop more farm land.

IRRIGATION IN UNITED STATES. There has been a very limited amount of new irrigation construction in the United States during 1920. No large new projects have been begun in any State, although several very large ones have been proposed.

The United States Reclamation Service reports the total receipts from the sale of public lands from the passage of the act (1902) to June 30, 1920, as \$100,078,475.68, and from the sale of town lots as \$493,329.63. To this has been added a special appropriation of \$1,000,000 for the Rio Grande project and a loan of \$20,000,000, and \$1,162,005.81 from the act providing for increased compensation to civil employees, making a total in the Reclamation fund from original sources of \$123,178,779.77. Collections creditable to the Reclamation fund have amounted to \$32,864,058.01, and to the Rio Grande project \$91.78, making the grand total of funds \$156,042,929.56. The gross expenditures for construction to June 30, 1920, were \$133,832,460.69, and the total revenues during construction have been \$9,008,747.51, leaving a net cost of construction of \$124,823,722.18.

The total cost of operation and maintenance to June 30, 1920, was \$9,565,595.63, and of this \$230,187.94 was charged over to construction. The total revenues credited to operation and maintenance to June 30, were \$7,668,306.25, leaving a deficit on operation and maintenance of \$1,667,101.44. The total acreage in projects is 3,300,000 acres, the acreage to which the Service was prepared to supply water in 1920 was 1,634,000, and the acreage irrigated in 1920 was 1,187,638. The receipts from the sale of public lands and from repayments to the Reclamation fund have not been sufficient to permit of the undertaking of new projects, all funds being used in the completion of existing projects.

Congress has provided by law two new sources of revenue, but funds are not yet available from either source. The Act of Feb. 25, 1920, known as the "oil leasing act," provides that 52½ per cent of the receipts from bonuses, royalties, and rentals under the act shall be credited to the Reclamation fund; and the Act of June 10, 1920, creating the Federal Power Commission, provides that 50 per cent of charges arising from licenses under the act shall be credited to the Reclamation fund. The first of these acts is retroactive to some extent and will immediately produce revenue, but the power act will produce revenue only after power is developed under Federal licenses. It is expected that these additions to the reclamation fund will make it possible to undertake new projects in the near future.

Both the Democratic and Republican parties declared in their platforms of 1920 for the continuation and expansion of the reclamation work of the Federal government. The Democratic platform declared for ample appropriations for continuation and expansion along the same general lines followed in the past "with the government ultimately reimbursed for the entire outlay." Heretofore there have been no direct appropriations for reclamation work, and this declaration seems to favor a change in this regard. The Republican platform declared for "a policy to reclaim lands and the establishment of a fixed national policy of development of natural resources in relation to reclamation through the

now designated government agencies." Since both of the great political parties are favorable to this work it is probable that Congress will provide funds for the enlargement of the governmental reclamation work.

There are pending in Congress several bills providing for the reclamation of land to be allotted to veterans of the World War, under plans which contemplate the furnishing of employment to veterans in the preparation of the land for settlement, and the sale of the land to the veterans on long time and easy terms, with loans for improvements and stock. The bills propose direct appropriations to provide funds for this work, to be repaid by the sale of the lands at prices based on the cost of reclamation.

In none of the arid States did the legislatures meet in 1920. Consequently there was no new legislation on the subject of irrigation. In California a bond issue to provide funds for land settlement work was to have been submitted to popular vote at the regular election in November, 1920, but a defect in the law providing for this referendum prevented a vote.

In the United States there were no new undertakings on a large scale in 1920. Irrigation development consisted in a more complete utilization of existing projects.

A Federal census of irrigation was taken in 1920, but the results have not been published.

IRRIGATION IN FOREIGN COUNTRIES. In Canada the Dominion and provincial governments have been making investigations of possible irrigation projects, and one large project has been organized—the Lethbridge Northern project. A proposal for the issue of \$5,400,000 worth of 30-year 7 per cent bonds has been approved. The project includes more than 100,000 acres of land. The project is organized under the Alberta irrigation district law, which provides that for the first seven years only interest shall be paid, the payments on the principal beginning in the eighth year.

With the improvement in conditions in Mexico proposals for land reclamation are being revived. The state of Sonora is investigating the feasibility of state construction of a project to cost about \$5,000,000. It is proposed that the National government provide for 60 per cent of the cost, by the sale of bonds. Purchasers of bonds are to be eligible to purchase lands and water rights. It is proposed also that the owners of private lands turn over to the state one-half their holdings, in order that these may be sold to meet a part of the cost. In Lower California there has been some expansion under the works supplying water also to the Imperial Valley, in California.

On the island of Jamaica, it is proposed to water the Liguanea Plains, near the city of Kingston. These plains are so dry that practically nothing is grown on them, while nearby are springs which are producing large swamps. It is proposed to use the water from these springs for irrigation and thus reclaim both the swamps and the dry plains.

The National Government of Brazil is undertaking a large irrigation project in the north-eastern part of that country. Appropriations for this work have been made, and an American engineer has been employed to take charge of the work.

In the coast country of Peru irrigation is necessary and many internal combustion engines are being installed for pumping. It is estimated

that in this section gravity irrigation from streams costs \$75 to \$80 per acre, and that pumping costs about as much more as the cost of the pumping machinery, which averages about \$25 per acre. Sugar cane is the principal crop grown on the irrigated land.

In Bolivia the Province of Cochabamba is investigating the possibilities of extending irrigation. This province has a dry winter—June, July, and August—but not more than 10 or 12 per cent of the land is irrigated. It is proposed to increase this area considerably.

Plans for the extension of irrigation in Egypt and the Sudan, by the regulation of the Blue Nile and the White Nile, have been in preparation for some years, but the work has been delayed by the war and by controversies between the engineers interested in the work. It was claimed by the engineers in charge of the investigation that the proposed use of the water in the Sudan would not affect the supply for Egypt; while engineers interested in Egypt contended that Egypt had first claims on the water and that the proposed use would decrease the supply. There were also charges of bad faith and garbling of records. This controversy led to the appointment of an international commission to investigate both the merits of the controversy and the practicability of the proposed plans. This commission decided that there had been no perversion of the records, but that the Egyptian engineers were correct in their contention that the proposed use in the Sudan would decrease the water supply for Egypt, and that Egypt should be supplied first. The plans are being revised in accordance with the report of the commission, and it seems likely that the improvement of the Blue Nile and the White Nile will begin soon and will result in the enlargement of the area subject to perennial irrigation in Egypt, and also provide water for a large area in the Sudan.

In Asia Minor both the Turks and the English undertook large irrigation enterprises in 1915 and have been doing more or less work on them since that time. The Konia district in Mesopotamia is the most important of the English projects. In this district in 1920 there were about 135,000 acres under ditch with 98,000 acres under actual cultivation. Land holdings are limited to 135 acres. Peasants can obtain land by working an assigned tract for 15 years, or can obtain title sooner by making cash payments. Wheat, barley, and hardy vegetables are the principal crops grown. The climate is too cold for rice or cotton.

In India plans have been prepared for the building of three new canals from the river Indus and have been submitted to the Government of India for approval. This scheme provides for a barrage about 2 miles below the gorge of the Indus, at Sukkur, and a series of perennial canals on both sides of the Indus to irrigate approximately 5,000,000 acres. The barrage will be about 5000 feet long, and will raise the water high enough to provide a perennial supply to the canals to be built. These high-level canals will render obsolete several existing canals, and will supply water to the land by gravity flow, doing away with the lift irrigation now generally practiced. The present annual cultivation on the left bank of the Indus amounts to 657,000 acres, whereas, it is anticipated that when irrigation has fully developed under the new scheme, the cultivated area will amount to more than 2,000,000 acres, all having a reliable water supply. A system of

canals on the right bank of the Indus will supersede the whole of the existing flood-water canals in that section. At present 893,000 acres are irrigated annually but it is anticipated that this will ultimately be increased to 1,725,000 acres. In addition to increasing the acreage, this assured water supply should greatly increase the crops grown per acre.

There will be also a large canal taking water from the Indus to the Eastern Nara River, to supplement the supply for the canals taking water from that stream. The area irrigated at present from the Eastern Nara is 484,000 acres. When the proposed works are completed it will be possible to irrigate annually 1,530,000 acres. The total area at present irrigated in the territory under discussion is slightly over 2,000,000 acres. The area that it is estimated can be irrigated under the new scheme exceeds 5,000,000 acres—an increase of over 3,000,000 acres. The estimates of cost place this at about \$52,000,000, or about \$10 per acre.

The Government of Ceylon is making investigations looking to increasing very largely the cultivation of rice in that island.

Construction on the interstate project on the Murray River in Australia has begun and is being pushed as rapidly as possible. The plans for this project include a reservoir with a capacity of 1,000,000 acre-feet, and canals to water 1,000,000 acres. It will help, also, to control floods and maintain navigation in the Murray. The estimated cost of this project is \$22,000,000, of which \$5,000,000 is to be paid by the Commonwealth of Australia, while the balance is divided equally among Victoria, New South Wales, and South Australia. These three states are undertaking experimental work in irrigation to aid in the utilization of the water made available. It is expected that the construction of this project will aid in the soldier land-settlement movement.

DRAINAGE IN UNITED STATES. There was very little new drainage work undertaken in the United States in 1920. In the arid region the necessity for draining irrigated lands is becoming more urgent from year to year, and drains are being installed on most of the large irrigating projects. On the Roosevelt project, in the Salt River Valley, Ariz., a very interesting experiment has been made in the past two years. In sections where the ground water has come too near the surface wells have been put down into the gravel which underlies the valley and water is pumped into the irrigating laterals which cover the land. The well water is mingled with the river water, in order that its salts may be sufficiently diluted to prevent injury to crops. It has been found that the pumping has lowered the ground water and added to the supply of water for irrigation without injuring the land on which the water is used.

Few legislatures met in 1920, and no important drainage legislation was enacted. The proposed soldier-settlement legislation in Congress, previously mentioned, includes reclamation by drainage, as well as by irrigation.

DRAINAGE IN FOREIGN COUNTRIES. The drainage of the Zuyder Zee, decided upon some years ago, has begun, and this has raised some interesting economic questions. While this work will increase the area of agricultural land, it will destroy the occupation of a large number of people engaged in fishing and associated industries.

The number of people affected is estimated at about 500,000. A commission representing the national government is investigating the conditions with the object of proposing a plan for compensating the persons injured. It is proposed to pension those whose means of earning a livelihood are destroyed, but no definite sums have been proposed.

Since the close of the war there has been great activity in drainage in Italy, particularly in Lombardy, Piedmont, and Venetia. The provinces approved 562 drainage projects to be undertaken with public aid in 1920.

In the Nile delta there is great activity in drainage, and it is estimated that the area available for cotton growing there will be increased by more than 600,000 acres by this means.

It seems probable that the fall in the prices of agricultural products, in progress at the end of 1920, will have a deterring effect on land reclamation by either irrigation or drainage.

RED CROSS, AMERICAN. The American Red Cross, operating under a charter granted by Act of Congress Jan. 5, 1905, is officially designated: (1) To furnish volunteer aid to the sick and wounded of armies in times of war in accordance with the conventions of Geneva; (2) To act in matters of voluntary relief and in accord with the military and naval authorities as a medium of communication between the American people and their army and navy; (3) To continue and carry on a system of national and international relief in time of peace and to apply the same in mitigating the sufferings caused by pestilence, famine, fire, floods, and other great national calamities; and (4) To devise and carry on measures for preventing the same.

The fiscal year 1920 saw the American Red Cross devoting all its energies to two major undertakings, viz., complete fulfillment of its obligations to the veterans of America's participation in the World War and to their families; completion so far as possible of relief work among the war-exhausted peoples overseas.

SERVICE TO WORLD WAR VETERANS. When the year began there were approximately 1,000,000 men still in the service. There were also more than 3,000,000 ex-service men, many of whom were finding it difficult to readjust themselves to civilian life. There were 500,000 disabled men, some still in the army but many who had been discharged, who needed a great deal of skilled and friendly service to enable them to avail themselves of the substantial provisions made by the government for their support and rehabilitation.

To the men still in the army, the Red Cross continued to furnish recreation, assistance in straightening out domestic problems, including emergency loans, and various forms of comforts. Special Red Cross service was available for those in the military and naval and United States Public Health Service hospitals. In addition Red Cross Home Service Sections were looking after the families as well as serving the ex-service men who had returned to their homes. This chain of over 4000 Red Cross service stations operated with effectiveness in helping to solve the difficult problems which clustered around men suffering from mental afflictions, from tuberculosis and from other serious disabilities resulting from the war, as well as those caused by the general upheaval in family life caused by the war.

One of the interesting post war rehabilitation operations carried on entirely by the Red Cross

was the Red Cross Institute for the Blind, at Evergreen, Baltimore, Md., where nearly every service man blinded or partially blinded in the World War was treated and reeducated to become self-supporting in the workaday world.

The extent to which Red Cross Home Service had rendered service to men and their families was revealed in the annual report of the society, which showed that from the entrance of the United States into the World War to the end of the fiscal year of 1920 there were 7,000,000 instances in which this help was extended the man or his family at his home, involving an expenditure of over \$20,000,000.

FOREIGN RELIEF OPERATIONS. American Red Cross foreign relief operations were carried on during the fiscal year or some part of it in the following countries: France, Belgium, Poland, Rumania, Serbia, Montenegro, Albania, Greece, Bosnia-Herzegovina, Latvia, Esthonia, Lithuania, Finland, Austria, Hungary, South Russia, Turkey (for Russian refugees), Italy Czecho-Slovakia, and Siberia. By the end of the year the contraction of Red Cross foreign operations resulted in its overseas work being confined to Poland, Serbia, Montenegro, Albania, West Russia, Vienna, and Budapest, Constantinople, and South Russia.

In closing its relief work in France and Belgium the Red Cross furnished supplies to 3865 villages and directly benefited 3,030,000 persons by gifts or sales of necessities of life at cost price. Hundreds of coöperative stores established in this area during the year by the Red Cross were operated by the French and Belgian authorities long after the Red Cross withdrew.

In Poland, which during the year became the most extensive operation by the American Red Cross in Europe, it established 258 hospitals with a capacity of 26,123 beds. It aided 30 established dispensaries and helped establish 82 others. It furnished supplies to 22 sanitary and bath trains in the fight against typhus. It established and maintained three medical training institutions with a capacity of 1075 beds. It aided 207 orphanages, where 16,470 individuals were cared for. It distributed clothing to over 80,000 children, gave general relief to 2316 towns with a population of more than 700,000. All of this was in the northern part of the new republic, in an area still under the lash of war. In Southern Poland also, however, more than 1000 hospitals and other charitable institutions were aided.

Rumania was among the first of the Balkan countries to return to semi-normal conditions, the American Red Cross assisting in this consummation during the year by operating 6 hospitals, furnishing supplies to 295 other hospitals, treating over 6000 patients at dispensaries, furnishing relief supplies to 219 schools and 232 orphanages, conducting 322 soup kitchens where nearly 100,000 were fed, dry food distribution to over 170,000, and distributing miscellaneous relief articles to half a million people.

In Serbia the work of the American Red Cross during the year was comparatively light, consisting chiefly of education along sanitary lines. In Albania the American Red Cross established hospitals at 4 central points, in addition to creating 5 medical dispensaries, 4 dental dispensaries, and numerous infant welfare and milk stations. More than 25,000 persons were aided by the distribution of 96,000 garments transported to the hill tribes by pack train. Child-feeding was the

principal task in Montenegro, 30,000 orphans being cared for by institutions which drew their supplies largely from the American Red Cross. The greatest need in Greece was for warm clothing, and the Red Cross distributed 120,000 garments and blankets. In Bosnia-Herzegovina child-feeding was the principal activity.

In Western Russia and the Baltic states (Latvia, Esthonia, Lithuania, and Finland), operations by the American Red Cross relieved the distress of nearly 300,000 civilian poor, while over 21,000 refugees and over 2500 war prisoners were assisted. Red Cross physicians treated nearly 20,000 typhus victims, 19 disinfecting stations being established. Among the institutions aided were 62 dispensaries, 217 hospitals, and 110 orphanages. Ten food kitchens and 45 dry food distribution centres also were operated.

South Russian operations of the American Red Cross, extending into the Crimea and among the refugees crowding the vicinity of Constantinople consisted largely of caring for the thousands of refugees fleeing from the fighting zones and in combating typhus and cholera.

During the year the need of direct relief in Italy diminished to a point where it was possible for the American Red Cross to confine its operations to Home Service for American soldiers and their families, and the founding of welfare institutions for children.

Desperate food and medical conditions were found in Vienna and Budapest. In the former city the Red Cross unit aided 98 hospitals and distributed more than 76,000 articles of medicine and clothing, 55,000 pounds of milk, meat, and cocoa and helped care for 40,000 under-nourished children. Similar work was carried on in Budapest.

In Czecho-Slovakia Red Cross relief operations closed with the exception of assistance to the native agencies in building up disease-fighting institutions.

The far-flung Red Cross operations in Siberia brought to a close, except for the distribution of large stores of supplies still on hand, with the withdrawal of the American forces during the year. When the work stopped the cargoes of 30 relief ships from America had been distributed among the needy, not to speak of portions of the cargoes of 92 other ships from other countries. The relief trains covered 332,000 miles. Eighteen hospitals were operated in addition to the work of the typhus trains, while an average of 7 articles of clothing was given to each of 387,500 women and 775,000 children. The American troops also were assisted in numerous ways. Over 500 American relief workers, in addition to hundreds of natives were needed to carry on the work.

At the end of the fiscal year there were 3575 active Red Cross chapters in the United States.

Total expenditures by the American Red Cross during the fiscal year, exclusive of disbursements by chapters, were \$69,400,000 divided as follows:

Relief in foreign countries	\$51,000,000
Military relief in the United States	8,600,000
Civilian relief in the United States	2,800,000
Other relief in the United States (including public health and nursing services)	4,400,000
Service to chapters in developing peace-time programme	300,000
Management	2,300,000
Total	\$69,400,000

For home work see CHARITIES.

REED, JOHN. American magazine writer and Socialist, died of typhus in Moscow, Russia, October 17. His funeral was celebrated with public honors. He was born at Portland, Ore., Oct. 22, 1887, and graduated at Harvard in 1910. During the next three years he served on the staff of New York magazines and in 1913 was correspondent with Villa's army in Mexico for four months, writing for the *Metropolitan Magazine* and the *New York World*. He was a war correspondent in Europe in 1914 and 1915. He was also an editor and a member of the Board of Directors of *The Masses*. His experience in Mexico resulted in the publication of *Insurgent Mexico*. He also wrote various short stories, poems, and plays and his play entitled *Moon-Down* was produced by the Washington Square Players. He was associated with the more radical Socialist groups and after the Russian revolution, having determined to join the Bolsheviks, went to Petrograd and was well received by the Bolshevik leaders. His activities had brought him into conflict with American authorities and he had been arrested several times. In the course of his adventurous life he was reported killed or captured in various European cities on several occasions. Besides the books above mentioned, he wrote *The War in Eastern Europe* (1916), *Tamburlaine* and other poems; *Red Russia*; *The Days in Bohemia* (1912); *Sangar* (1912); and the *Pageant of the Paterson Strike*.

REED COLLEGE. A co-educational institution of the higher learning at Portland, Ore., founded in 1911. The enrollment for the fall was 119 men and 137 women. The faculty had 30 members. The endowment of the institution is variously estimated for much of the property is real estate which bears interest. According to the tax assessed in 1918, the holdings of the college exclusive of the campus and college buildings were valued at about \$1,500,000. The library contained 16,000 volumes. New faculty houses have been built by the college accommodating six families. The Anna Mann Cottage was built for the women of the college from the funds provided in the will of Mrs. Anna Mann. President, having resigned (William T. Foster), Mr. A. A. Knowlton was acting chairman of the Administration Committee.

REEDY, WILLIAM MARION. Editor, died, July 26. He was born at St. Louis, Mo., Dec. 11, 1862, and received an academic education. He afterwards studied accounting at the St. Louis University. In 1880 he began work on St. Louis newspapers and was on the staff of several down to 1893, after which he became the editor, and in 1896, the proprietor of the well-known magazine, *Reedy's Mirror*. In the field of literary journalism, he was widely known and much admired for his generous appreciation of new writers and his discernment of literary merit. His acquaintance among the writers of the country was extraordinary and many who have since risen to high reputation, made their first appearance in his magazine. He was himself the possessor of a vigorous style and wrote papers of great interest on a wide range of subjects.

REFORMED EPISCOPAL CHURCH. This denomination was formed from a number of members of the Protestant Episcopal Church led by Bishop David Cummins of Kentucky who separated from the mother church because they believed it to be too ritualistic. The denomina-

tion was organized in New York City in 1873. Its doctrines are very similar to those of the Protestant Episcopal Church and also those of the Church of England. It is in close relation with the Liturgical Free Churches of England. Triennial Conventions are held, the next one being scheduled for May, 1921. To the last convention (1918) there were reported 11,217 communicants, showing a slight increase over the figures for 1916, and 9496 Sunday School members. In 1916 there were 75 churches. The Board of Home Missions aids needy churches and negroes in the South. Seventeen missionaries carry on this work. Eight foreign missionary stations are maintained in India, with 6 missionaries and 20 native helpers. The church also conducts 17 primary schools, 2 hospitals, where 45,000 persons are treated annually, and an orphanage with about 50 inmates. A theological seminary is maintained in Philadelphia, where is also located the church publishing house. The church boasts the oldest church periodical in the United States, *The Episcopal Recorder*. The Presiding Bishop is the Rt. Rev. Samuel Fallows, Chicago, Ill., and the bishop of the Eastern synod is the Rt. Rev. Robert L. Rudolph, Philadelphia, Pa.

REFORMED PRESBYTERIAN CHURCHES. In 1906 seven denominational churches combined to form the Council of the Reformed Churches in America holding the Presbyterian System. The churches are: The Reformed Church in America, the Presbyterian Church in the United States of America, the Presbyterian Church in the United States, the Reformed Church in the United States, the United Presbyterian Church, the Associate Reformed Presbyterian Synod, and the Cumberland Presbyterian Church, Colored. The Council is for the prosecution of work that can be done better unitedly than separately. A meeting was held in Philadelphia during 1920.

Statistics for 1920 for reformed Presbyterian churches are as follows: The Reformed (Dutch) Church in America had 135,935 communicants; the Reformed Church in the United States, 329,937; Christian Reformed Church in North America, 41,795; Reformed Presbyterian Church, Synod, 8520; the Associate Reformed Presbyterian Synod, 16,564; Reformed Presbyterian Church, General Synod, 2400. See also **PRESBYTERIAN CHURCH, CUMBERLAND PRESBYTERIAN CHURCH, and RELIGIOUS DENOMINATIONS.**

REFUSE DISPOSAL. See **GARBAGE.**

REHABILITATION OF DISABLED SOLDIERS. See **EDUCATION IN THE UNITED STATES.**

REINDEER. See **ALASKA.**

REJANE, GABRIELLE (CHARLOTTE REJU). Celebrated French actress, died in Paris, June 14. She was born in Paris, June 6, 1857, the daughter of an actor, and in 1874 won the second prize for comedy at the Conservatory. She appeared in vaudeville in the following year and soon won success by her creation or original interpretation of many rôles. She went to the Variétés Theatre in 1882 and later in the same year to the Ambigu, where she gave proof of great powers in her rendering of Madame Cezambre, in Richépin's *La Glu*. Later she married the manager of the Odéon, and appeared with great success in many rôles at that theatre, especially the rôle of Madame Sans-Gene in the play of that name by Sardou and Moreau. She appeared in London in

1894 and later appeared several times in the United States where her Madame Sans-Gene was highly appreciated. During the Great War she did much for the cause of the Allies and appeared in several patriotic plays.

RELATIVITY. See **PHYSICS.**

RELIEF FOR WAR VICTIMS. During the winter of 1919-20 the larger relief organizations had provided for over 3,200,000 children, and 5,000,000 adults in Europe. The amount provided by America in charity approximated \$100,000,000. As the result of gradual recuperation and this relief work, as well as the Congressional appropriation of flour the subsistence condition in central and eastern Europe was distinctly better than that of the previous year. But the need of charity in food relief particularly for the undernourished children of the poor, continued over the winter of 1920-21. With the harvests of 1919 and 1920, Belgium, France, Serbia, and Rumania were enabled to care for their own destitute childhood. Finland, the Baltic states, and Czecho-Slovakia had made great improvement and reduced the number of dependents upon relief organizations, but it was evident that the recuperation of Poland, Finland, Czecho-Slovakia, and Austria had not proceeded far enough to enable them to find food through private credits, and that chaos through starvation threatened the stability of their governments. Toward the end of 1920 there were still 11,000,000 European destitute war orphans. In the Baltic provinces there were 150,000 orphans; in Poland, 500,000; in Austria-Hungary and Czecho-Slovakia, 1,000,000; in Roumania, 200,000; in Jugo-Slavia, 600,000; in Soviet Russia three to four million orphans. The typhus epidemic in Poland, which had ravaged that country for three years had increased in intensity primarily because of the large influx of refugees and prisoners of war from Russia and the thousands of cases imported from Ukraina and other eastern territories. 360,000 cases were estimated for 1920 with a mortality of from 45 to 60 per cent. The whole of Armenia was in need of assistance.

The most important relief work this year has been done by the American Relief Administration, the Red Cross (q.v.), the Near East Relief, and the American Friends Service Committee. American Relief Administration. When it became evident to Mr. Herbert Hoover that the urban districts in Finland, the Baltic states, Poland, Austria, Serbia, and Czecho-Slovakia would require exterior assistance over the winter of 1920 to prevent actual starvation, he volunteered to continue the American Relief Commission as a private charity (see preceding **YEAR BOOK**), and established the European Children's Fund for the feeding of 2,500,000 children. The organization was based upon a series of central and sub-committees of principal residents in all those areas. It established over 3000 kitchens for the feeding of the children, and undertook the supply of foodstuffs to orphan asylums and children's homes generally. It was stipulated that the governments and private charity in these different countries should pay not only the entire cost of maintaining the distribution systems in the countries themselves, but also that they should contribute such native food supplies as were available, the American intervention, therefore, taking the form of the initial organization instruction as to method, and the continuous import of such foodstuffs as were not locally avail-

able, such as milk, fats, etc., and an inspection service for the purpose of maintaining the efficiency of the system. The European Children's Fund was supported largely by racial groups in the United States, and by the Jewish Joint Distribution Committee.

The number of children under charitable assistance in the spring of 1920 was approximately as follows:

Poland	1,400,000
Austria	300,000
Czecho-Slovakia	500,000
Serbia	200,000
Hungary	130,000
Finland	60,000
Lithuania	40,000
Estonia	30,000
Latvia	30,000
North Russia	20,000
Russian Armenia	200,000
Total	2,910,000
Germany (coöperating with Friends' Service Committee)	600,000
Total	3,510,000

Coördination has been arranged in support of the feeding of children of German poor through the American Friends' Service Committee and various other activities. A method has been devised for the remittance of orders for food on warehouses established in Europe, to take the

on credit by the Grain Corporation. Transportation of these supplies was supported by the Red Cross, the Commonwealth Fund, and the British government. The total expenditure of the American Relief Administration during the year ending Aug. 1, 1920, has been \$22,983,782. Certain friends of the American Relief Administration made two gifts aggregating \$500,000 for the purchase of food drafts and clothing for the educated professional people of Austria, Hungary, Czecho-Slovakia, and Poland.

The European Relief Council, composed of the American Relief Administration, the American Red Cross, the American Friends' Service Committee, the Jewish Joint Distribution, the Federal Council of Churches of Christ in America, the Knights of Columbus, the Y. M. C. A., and the Y. W. C. A. was formed for the purpose of co-operation between the larger relief societies in the work over the winter of 1920-21, priority to be given in appeals to the support of the 4,000,000 undernourished children and students.

The Commission for Relief in Belgium had completed its work during the year 1919. When the war books were finally balanced it was found that during five and one-half years of operations the Commission had delivered 4,945,975 tons of food of which 1,077,506 tons had been supplied to Northern France. The support of the operations rose from the following sources:

	For Belgium	For France	Totals
Total Government subsidies	\$479,982,268	\$238,338,327	\$718,320,595
Commercial Exchange	6,330,220		6,330,220
World charity	43,938,929	5,111,900	49,050,829
Profits made on resales of imported food to self-supporting population	107,243,418	18,295,243	125,538,661
Total C. R. B. accountability	\$637,499,835	\$261,745,470	\$899,240,365

place of monetary remittances to relatives abroad and by coöperation with the American Bankers Association is effecting a large measure of substantial relief.

On this operation a margin of profit is earned and given over to the support of the Children's Fund. In this way \$605,194.61 was added to the fund in proportion to the number of food drafts sold for each country as follows: Germany, \$144,762.55; Austria, \$289,222.50; Hungary, \$45,813.23; Czecho-Slovakia, \$44,481.81; Poland, \$80,914.52.

Flour on credit is now being supplied by the Grain Corporation, and its transportation has been furnished partially by the British and neutral governments under transport arrangements coöperated in by American Relief Administration officials in Europe.

A large active campaign in combat of typhus has been organized in Poland under the Relief Administration, comprised of volunteers from the American Army Medical Corps, and with supplies furnished through the American Relief Administration by various Allied armies. Altogether, with the sales of flour on credit by the Grain Corporation and the continuation of these various charitable activities, which are themselves furnishing over \$7,000,000 per month in relief, the countries under duress should weather through until next harvest, when the last echo of famine should have died away. The supervision of relief measures in Russian Armenia has been continued under the American Relief Administration. The relief supplies were furnished by the Near East Relief and from sales of flour

These accounts do not include the handling of internal production which was controlled through a decentralized system of local committees under the direction of the Commission. Their accounts involving some \$300,000,000 were simply audited by the Commission.

C. R. B. EDUCATIONAL FOUNDATION. When it came to the disposal of the funds remaining, the Belgian government requested Mr. Hoover to establish some permanent memorial to the relief work of America in feeding 7,500,000 Belgian people during the war by making use of the funds remaining with the Commission for Relief in Belgium upon the completion of its services. These balances accumulated after the Armistice largely from profits on the sale of foodstuffs to those who could pay, the rapid diminution of the numbers of destitute in Belgium making the balances unexpectedly large. The total balances, so far available, are approximately 210,000,000 francs (\$42,000,000 par exchange). The C. R. B. Educational Foundation, Inc., was, therefore, created in America, and the Fondation Universitaire, chartered by Act of Parliament in Belgium. For these separate foundations, perpetual associations, for the general purpose of advancement of learning in Belgium and the systematic exchange of intellectual ideas between Belgium and America, a total sum of about 115,000,000 francs (\$23,000,000 par value) has so far been turned over. The Commission for Relief in Belgium has made payments amounting to 95,000,000 francs for the rehabilitation of Belgian universities, as follows: University of Brussels, 20,000,000 francs; University of Ghent, 20,000,000 francs;

University of Liege, 20,000,000 francs; University of Louvain, 20,000,000 francs; School of Mines at Mons, 5,000,000 francs; Colonial School at Antwerp, 10,000,000 francs.

The American Foundation has established 48 exchange graduate fellowships between Belgium and American universities, 24 Americans having been chosen each year to study in Belgium, and 24 Belgian fellows to study in America. It has also established exchange professorships between Belgian and American universities, has made grants for special investigations, and has allocated the major portion of its annual income to the Fondation Universitaire, which has also received 25,000,000 francs directly from the liquidation of the Commission for Relief in Belgium. In its work of providing vocational educational opportunities in Belgium to students who are not otherwise able to secure these opportunities it is expected that about 4000 boys and girls will benefit each year.

JEWISH WAR RELIEF WORK. The year 1920 did not bring any improvement in the terrible condition of the Jewish war sufferers in eastern Europe, according to reports received by Felix M. Warburg, Chairman of the Joint Distribution Committee of the American Funds for Jewish War Sufferers. The situation is particularly distressing in the Ukraine and in the territory east of the Bug in Poland.

More than 60 American representatives of the Joint Distribution Committee are now doing relief work in the various countries where the Committee is active. The disbursements for the year amounted to \$10,633,580.20. Large shipments of food, clothing, and medicaments were made to Poland, Russia, Rumania, Czechoslovakia, Austria, Hungary, Lithuania, and the Baltic states. Aid was likewise given to Palestine, while the Committee cooperated with other agencies so that many war prisoners in Siberia were repatriated. Besides this the Committee appropriated \$5,000,000 for reconstructive measures, such as the organization of credit co-operatives, the restoration of destroyed homes and shops, and other measures that will help the ruined merchants and artisans to their feet. From Jan. 1 until Sept. 30, 1920, the Committee's Transmission Department forwarded \$5,223,000 in individual remittances from American Jews to relatives located in places which it was difficult for private banks to reach. Finally, the Committee appropriated \$2,000,000 for medical and sanitary relief work, which will be carried on by a special unit of 17 under the direction of Dr. Harry Plotz.

The Joint Distribution Committee cooperated with the Red Cross, the American Relief Administration, and other American relief organizations active in the war-stricken countries. It contributed the sum of \$725,000 to the American Relief Administration, to be used chiefly for non-sectarian relief work among children. It also gave \$100,000 for the tuberculous children of Germany.

The funds disbursed by the Joint Distribution Committee included money collected by the American Jewish Relief Committee, of which Lewis Marshall was president; the Central Jewish Relief Committee, and the People's Jewish Relief Committee. From its organization in October, 1914, until Dec. 27, 1920, the Joint Distribution Committee disbursed \$35,919,191.85. The offices of the Committee are located at 20

Exchange Place, New York City. Mr. Albert Lucas is secretary.

NEAR EAST RELIEF. The Near East Relief is an organization incorporated by the Congress of the United States in August, 1919, "to provide relief and to assist in the repatriation, rehabilitation, and reestablishment of suffering and dependent peoples of the Near East and adjacent areas; to provide for the care of orphans and widows and to promote the social, economic, and industrial welfare of those who have been rendered destitute, or dependent directly or indirectly, by the vicissitudes of war, the cruelties of men, or other causes beyond their control." (Articles of Incorporation.)

The work of the Near East Relief has extended from Egypt to the Caucasus, from Constantinople to Mesopotamia and Persia, including within its field of operations, Syria and Palestine, Anatolia and Cilicia, the small Armenian Republic of the Caucasus, and some work in Georgia Azerbaijan as well. The crying need for relief in this great region, characterized by Herbert Hoover as the "most desperate in the world" arose not simply from war devastation and scarcity, but from the unique situation which had been brought about by the Turkish policy of exterminating its subject Christian peoples. The Armenian and Greek populations of Turkey had been torn from their homes and were deported to distant desolate regions. Thousands (especially the men) were massacred outright, leaving chiefly women and children as survivors.

From the North of Turkey some 500,000 Armenians effected escape to the Russian Caucasus, where lived a large number of their race. Eventually the small Armenian Republic was set up here, after the collapse of the Russian Empire. The horrors of unequalled warfare against Turkish aggression, famine, and congestion reduced the whole population, native and refugee alike, to the verge of starvation. In Syria and Palestine blockade, famine, and epidemic, the result of Turkey's war policy, almost halved the population and left the country crushed and prostrated. In Egypt, hundreds of refugees had found an asylum under British protection. In North Persia the Assyrian people had been attacked by Turks and Kurds, and finally the whole nation had taken flight to the south. The years 1917 and 1918 found all of Persia in a state of famine, the result of isolation, the ravages of contending armies, and the sudden stagnation of trade and industry.

Before the armistice the Near East Relief had carried on a piece of work in these regions against the greatest odds. The armistice brought the opportunity to enlarge the work, and during the year 500 American workers, food supplies, and hospital units were sent over.

In point of financial operations, the Near East Relief has received and administered in cash more than \$41,000,000 since its organization. If the value of the flour contributed by the United States Grain Corporation and administered through Near East Relief is included, the total relief operations of the organization are considerably in excess of \$50,000,000.

In the Near East the region is divided into four big regions—Caucasus Area, Constantinople, Anatolia Area, Syria-Allepo Area, Persia-Mesopotamia Area. The official statistics of the year show the following accomplishments:

	<i>Caucasus</i>	<i>Beirut-Aleppo</i>	<i>Constantinople Anatolia</i>	<i>Totals</i>
American N. E. R. personnel .....	.....	.....	.....	538
Hospitals	43	11	9	63
Beds	5,681	346	525	6,552
Clinics	85	21	22	128
Rescue homes .....	.....	5	6	11
Orphanages	81	27	121	229
Children:				
1. In orphanage	20,779	8,007	25,814	54,600
2. Partial support outside of orphanage ..	55,039	.....	1,000	56,039
Food relief	561,970	Number in Anatolia-Aleppo areas vary monthly with changing political conditions; for example, 10,000 rehabilitated Armenians became refugees again after the attack on Marash.		
Supplies	1,300,000 lbs. of old clothing and shoes shipped from America in 1920. This does not include garments made in Near East Industrial Shops.			
Personal service	187 persons in the Near East were put in touch with their relatives in America and transportation was provided for 462 persons from Armenia to America by their relatives through Near East Relief, during a single recent month.			
				\$720,000 1,300,000 lbs.

The work represents the literal saving from death of hundreds of thousands of people, who would have otherwise undoubtedly perished from starvation and disease. It has given the first chance for life and health and education for little children who have known nothing but cruelty, cold, and hunger during five years of homeless wandering. Homes have been rebuilt, fields cultivated again, and artisans started in their work. The changing political situation constantly brings new problems. The work of rehabilitation has been retarded, the siege of Adana has necessitated the running of big soup kitchens now for many months, serving as many as 60,000 persons. The very presence of the Near East Relief workers has been a protecting and stabilizing force in the chaos of renewed hostilities, which has engulfed Cilicia, the Caucasus, and nearly all of Anatolia. In Marash nearly 10,000 Armenians were killed in February of the present year. It was chiefly through the intervention of American relief workers that a substantial remnant were saved. To-day some more than 5000 of them are being cared for in the city of Marash alone, by the Near East Relief, until such time as they can, with safety, leave the city for their homes or for other fields of self-support.

The largest and most important part of the work of the Near East Relief is the orphan work, which must necessarily continue for some time in order that these children, who have been rescued from death, may be brought up healthy, well-trained citizens, who can take their part in reorganizing this shattered region of the world.

The headquarters of the organization in the United States is No. 1 Madison Avenue, New York, and Washington (Woodward Building).

OTHER FUNDS. An interesting work for the continued care of American soldiers disabled in the war was done by the Carry On Association, Inc., of 271 Madison Avenue, New York, Wendell Phillips, Chairman. This Association undertook to provide club homes for disabled men who were receiving vocational training from the Federal board and those whose allowances were not adequate to enable them to live comfortably without some such provision. Homes were opened in New York, Minneapolis, and Denver. Receipts of the National Association for the six month period ending March 31, 1920, amounted to \$94,190.71. While the number of organizations active in the Allied countries of western Europe gradually

decreased as France, Belgium, and Italy became more able to solve their own domestic problems, many continued their work without interruption. The American Committee for Devastated France, 16 East 39th Street, New York, which began its work in 1918 as the outgrowth of the civilian division of the American Fund for French Wounded, continued to work with the civilian population in certain devastated regions to which it was assigned by the French government. Since November, 1918, 17,562 inhabitants had been returned and established in their homes. 2500 children fed daily and 1000 children given special care under a child hygiene expert. Particular emphasis was placed on child health work. The work abroad was in charge of Mrs. A. M. Dike and Miss Anne Morgan. Receipts for the fiscal year ending March 31, 1920, totalled \$804,300.95. Another piece of work for children was carried on by the Argonne Association, 140 West 58th Street, New York, Dr. Haven Emerson, treasurer, organized early in 1919. Its aims were to care for French war orphans, to train them to earn their livelihood in a simple healthful manner, to reclaim children from city life, to provide agriculturists for France by the training of boys in agricultural work, to stimulate the use of modern methods in small farming and to administer a model system of child care. The first part of the work to be put in operation was the child placing centre at Dun-sur-Auron for the care of children from 4 to 14 years of age. For the four months ending June 30, 1920, the sum of \$20,599.24 was collected for the work of the Association. The American Free Milk and Relief for Italy, Vanderbilt Hotel, New York, Walter Meacham, treasurer, continued its interesting work of supplying dried milk especially for the use of Italian children up to the age of four years. A dispensary was opened in Rome for the distribution of milk, for general medical care and advice to children and their mothers. Receipts for the seven month period ending June 30, 1920, amounted to \$119,763.11. It was impossible during the year for relief agencies to begin any substantial work in Russia, although representatives of some American agencies succeeded in reaching interior cities and beginning work in a small way. The American Central Committee for Russian Relief was organized in November, 1919, with Montgomery Schuyler as secretary, and offices at the Buckingham Hotel.

New York. Its original plan was to send relief to those parts of Russia not under Bolshevik control. It was found more effective, however, to concentrate on relief work for refugees outside of Russia, who themselves presented a very serious problem. It was estimated that there were over a half million refugees, in the states bordering on Russia and at various other points. There were so many at Constantinople that the Committee decided to centre its work there for the present, although a group of tubercular Russians in Switzerland had also been given special care. Total receipts for the fiscal year ending Sept. 30, 1920, were \$145,420.99.

RELIGION. See LITERATURE, ENGLISH AND AMERICAN.

RELIGIOUS DENOMINATIONS. See articles on the respective denominations.

RENSELAER POLYTECHNIC INSTITUTE. A non-sectarian institution for technical training at Troy, N. Y., founded in 1824. There were 1050 students enrolled in the regular fall session of 1920. The faculty numbered 76. The productive funds of the institute amounted to \$1,950,000. The total assets for the year were about \$350,000. The library which is purely scientific contained about 13,500 bound volumes and there were 15,700 pamphlets. In November the addition to the chemical laboratory was completed, costing about \$175,000. As soon as building prices reach a reasonable condition a new dormitory is to be built for which the institution has \$112,000. President, Palmer C. Ricketts, LL.D.

RENTS. See HOUSING.

REORGANIZED CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS. According to the decisions of the United States district courts of Ohio and Missouri, this is the legal and actual continuation of the church which was founded in 1830 at Fayette, N. Y., by Joseph Smith, and is identical in faith and practice with that church. Its organization was based on what Joseph Smith claimed to be a divine revelation, telling him that he would be instrumental in setting up a church strictly conforming to the New Testament pattern, and that the church organized by his command would be endowed with the ancient gifts and authority.

As an essential part of this restoration, Smith claimed that he received a set of golden plates which had been hidden for centuries in the Hill Cumorah in New York State, and that by the power of God he translated these plates and found them to be a history of the Indians and their forefathers from the time they came away from Jerusalem, about 11 centuries before Christ until about 400 A. D. This record was called the Book of Mormon after the name of one of its principal characters, and purports to be an additional witness for Christ.

With an initial organization of six members in 1830, the sect grew and in a short time went to Ohio where it built the city of Kirtland, and a beautiful temple which stands yet to-day. At Kirtland the organization of the church was completed to what they claim was the New Testament model, and an active proselyting campaign was begun. Within a few years, owing to a fierce opposition, the church went to Missouri, and thence to Illinois, where it built the flourishing city of Nauvoo, and drew a large number of converts. At Nauvoo, persecution still raged, and as its culmination, Joseph Smith and his brother, Hyram, were killed by a mob on June

27, 1844. Confusion followed and Brigham Young and others with him led a large group west, which body ultimately arrived in the Salt Lake Valley, set up the Mormon Church, and introduced polygamy. The majority of the Latter Day Saints refused to follow Young's leadership and settled quietly in small groups throughout Illinois, Iowa, and Wisconsin. By 1860, Joseph Smith, son of the prophet, had taken charge and the believers in the original faith gathered together, and effected a reorganization. Under his leadership they began a vigorous offensive against Utah Mormonism, and were particularly active in attacking the Utah doctrine of polygamy. They used the Book of Mormon to combat the practice, because that book forbids it in the words: "There shall not any man among you have save it be one wife." The two organizations have always remained antagonistic and to quiet title to various church properties, the matter was taken to court and in every instance the Reorganized church was declared in legal succession to the original church.

The church now has a membership of 95,000 located in small groups throughout the United States, Canada, and foreign lands. It is actively prosecuting missions at home and abroad and Zionism is an important part of its programme. Frederick M. Smith, Ph.D., grandson of Joseph Smith, founder of the church, is now president and lives at Independence, Missouri, which is headquarters of the church. In addition to missionary work, the church maintains a hospital, homes for children and aged, a college, and a publishing house. Its economic theory is based on co-operation, and the church is financed on the ancient system of tithes, voluntarily contributed.

REUNION. An island belonging to France, situated about 420 miles east of Madagascar. Area, 920 square miles; population (1912) 173,822, of whom 159,218 were Europeans, 130,000 of these being of French origin. Chief towns are: St. Pierre, with a population of 29,481; St. Denis, with 23,972; St. Paul with 18,646; and St. Louis with 13,346. The chief port is Pointe de Galets, connected by rail with St. Pierre. The elementary schools in 1918 numbered 1173 with 370 teachers and 16,891 pupils. The chief products are sugar, rum, coffee, manioc, tapioca, spices, etc. The leading exports are sugar and rum. In 1918 the budget balanced at 6,798,558 francs. No later figures for commerce were available than those given in the preceding YEAR BOOK.

REVILLE, MARC. Former French deputy, died in November. He was born in 1863 and studied law; entered the administrative service; in 1903 was elected to the Chamber of Deputies. He was reelected in 1906-10, but failed in his canvass of 1914. In the Chamber he specialized in economic questions and played an important part in the investigation of the textile industries. He was member of many commissions on customs, commerce, industries, etc., and he served as Minister of Commerce, Industry, Posts and Telegraphs in the Cabinet of Ribot, which lasted only a few days (1914). He was enrolled among the Radicals of the Left. Among his writings may be mentioned: *The Régime des cultes d'après la loi de 1905* (1906); *L'Inventaire des biens et des établissements du culte* (1906); *L'Etat et les Eglises* (1909).

REYNOLDS, JAMES EMERSON. British chemist, died February 19. He was born in Ireland

in 1844 and educated at Dublin University. In 1873 he became professor of chemistry at the Royal College of Surgeons, Ireland; in 1891 president of the Society of Chemical Industry; and from 1875 to 1903 was professor of chemistry and chemical philosophy at Dublin University. In the course of his career he discovered a large number of chemical substances including thiocarbamide and many of its allies, a new class of colloids, and many derivatives of the elements of silicon. After 1903 he was engaged in research work in the Davy-Faraday laboratory of the Royal Institution. He published in 1874, *Lectures on Experimental Chemistry*, and in 1880, *General Experimental Chemistry*.

RHAETO-ROMANCE. See PHILOLOGY.

RHEAD, GEORGE WOOLISCROFT. British painter, etcher, illustrator, and writer on art education; died, April 30. He was a National Art scholar and gold and silver medallist. He studied under Legros and Ford Madox Brown. His paintings include: "Vespers," "The Wise and Foolish Virgins," "A Sacrifice to Neptune," etc. Among his etchings may be mentioned: "The Dream of Sardanapalus," and etchings of paintings by Watts, Pettie, Boughton, Stone, and others. He illustrated Bunyan's *Pilgrim's Progress* and Tennyson's *Idylls of the King*, and he wrote the *Handbook of Etching; Studies in Plant Form; The Principles of Design*; and various works on pottery, practical design, costume, etc.

RHODESIA. A territory belonging to Great Britain, situated to the north of the Transvaal and extending northward to the borders of the Congo State and former German East Africa; constituting a British protectorate under the administration of the British South Africa Company, whose charter dates from Oct. 29, 1889. It is divided into Northern Rhodesia which lies to the north of the river Zambezi and Southern Rhodesia, which lies to the south of that river and comprises the two former provinces of Mashonaland and Matabeleland. The Zambezi River is spanned at Livingstone, just below the Victoria Falls, by an American made cantilever bridge bearing the Cape to Cairo railroad. As the water plunges 400 feet, the electrical energy to be developed is incalculable. It has been proposed to carry the wires on steel "poles" fashioned like oil derricks, to the Kimberly mines, Johannesburg, Pretoria, and around to Cape Town, on the one hand, and up through Khartum and the Nile valley.

Northern Rhodesia comprises two provinces of Northeastern and Northwestern Rhodesia, which were amalgamated Aug. 17, 1911. Area, estimated at 291,000 square miles; population, about 890,000 natives and a permanent European population in 1918, estimated at 2400. The seat of government is Livingstone on the Zambezi River. Chief agricultural products are: corn, cotton, tobacco, wheat, and fruits. Rubber is produced and there is abundant timber. Gold, copper, lead, and zinc are worked. The exports include live animals, copper ore, lead, grain, hides, and skins. No later figures were available than those given in the preceding YEAR BOOK. Administrator in 1920, Sir Laurence A. Wallace.

Southern Rhodesia has an area of about 149,000 square miles with an estimated population in 1918 of 770,000 natives and about 37,000 Europeans. There were also 2900 members of the

Asiatic and other colored races. In 1918 there were 76 public schools and four aided schools. In 1917 the pupils numbered 4063. There are rich resources of gold and other minerals and the country is well suited for agriculture. The principal crop is corn. Tobacco has latterly been produced in increasing quantities. On Jan. 1, 1919, the output of gold was valued at £42,728,293. Administrator of Southern Rhodesia at the beginning of 1920, Sir Drummond Chaplin. See ANTHROPOLOGY.

RHODE ISLAND. POPULATION. According to the preliminary report of the census of 1920, there were 604,397 residents in the State, Jan. 1, 1920, as compared with 542,610 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 4084, a falling off of 22.8 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years, 1919 and 1920:

Crop	Year	Acreage	Produc.	Bu.	Value
Corn	1920	8,000	320,000		\$576,000
	1919	8,000	360,000		670,000
Hay	1920	47,000	52,000		1,718,000
	1919	47,000	61,000		1,945,000
Potatoes	1920	3,000	345,000		552,000
	1919	4,000	400,000		720,000

c Tons.

FINANCE. The balance on hand, Jan. 1, 1920 was \$675,429; the receipts during the year were \$6,909,172; the expenditures, \$6,187,173; and the balance on hand, Dec. 31, 1920, was \$1,397,428. The net indebtedness of the State reported by the Treasurer at the end of 1920 was \$9,200,082.

EDUCATION. Statistics of public schools in 1920 were as follows: Number of schools, 2127; school population, age 5 to 17 years, 138,625; pupils enrolled in public schools 91,056; pupils enrolled in other schools, 21,855; number of teachers, 2966; average number of teachers, 2741; average salary of teachers, \$987.05.

LEGISLATION. Among the measures passed in the regular session of the legislature may be mentioned: Complete revision of the State's corporation law; provision that State board of tax commissioners shall deduct property exempt in determining corporate excess tax; regulation of sale of intoxicating liquors for non-beverage purposes; promotion and maintenance of highways; provision for annual school census; bonus of \$100 for State's veterans of late war; regulation of State's water supply and prohibition of pollution.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 107,463; Cox (Democrat), 55,082; Debs (Socialist), 4351; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 44,858; Wilson (Democrat), 40,394; Benson (Socialist), 1914. The vote for governor was: San Souci (Republican), 109,138; Sullivan (Democrat), 55,963; Sherwood (Socialist), 3299.

LEGISLATION. Features of the legislative session were the ratification of the suffrage amendment; authorization of the \$500,000 bond issue for highways; permission to cities and towns to increase their tax assessment; and amendment of the State compensation law.

RICE. The international rice trade in 1920 was affected by the shortage of production in

1919 in the Far East and by an exportable surplus in the United States. At one time large stocks of rice accumulated at Hong-Kong could not move because America was not a buyer and Japan was unable to purchase for the time being on account of a crisis in the financial situation. Likewise large supplies of rice piled up in Cuba so that the Cuban government prohibited its importation from Sept. 6, 1920 to Jan. 1, 1921. During the first quarter of 1920 the United States exported over 300,000 pounds of rice to Japan, while less than 1000 pounds was shipped to that country during the entire year of 1919. Sumatra also imported rice from the United States during the summer of the past year. Siam, ordinarily a large exporting country, placed an embargo on the exportation of rice and rice products during the calendar year 1920.

Provisional figures published by the International Institute of Agriculture, Rome, placed the production of British India in 1920 at nearly two and three-quarter billion bushels, or about one-seventh more than was harvested the year before. The Japanese crop was estimated at 550,702,600 bushels, or over 2 per cent above the preceding year's yield. As estimated by the Department of Agriculture, the United States produced 53,710,000 bushels on 1,337,000 acres, or at the rate of 40.2 bushels per acre, as compared with 42,790,000 bushels on 1,091,000 acres and an average acreage of 39.2 bushels. The average farm price on December 1 was \$1.189 as against \$2.668 on Dec. 1, 1919. On this basis the total value of the crop was \$63,837,000 and \$114,152,000 for the two years respectively. Louisiana produces about one-half and Louisiana, Texas, and California nearly seven-eighths of the total crop of the country.

RICE, GEORGE STAPLES. Civil engineer, died, December 7. He was born at Boston, Mass., Feb. 28, 1849, and from 1869 to 1872 was assistant engineer at the Lowell (Mass.) and Boston waterworks. He was after that engaged in Boston on the water supply and was then engaged in mining engineering in Arizona and Colorado. In 1891 he was the chief engineer in the Boston Rapid Transit Company; and in 1905-07 was on the Rapid Transit Commission of New York and from 1907 to 1919 he was division engineer in the Public Service Commission for the first district of New York.

RICE INSTITUTE. An institution of the higher learning at Houston, Texas, founded in 1912. There were 736 students enrolled in the regular fall session of 1920. The faculty had 47 members with 57 fellows, assistants and student assistants. The endowment amounted to \$10,000,000 and the income for the year was \$600,000. There were 21,000 volumes in the library. The gift of Herbert Godwin was the Godwin Lectureship on Public Affairs, inaugurated by the Hon. William H. Taft. An athletic field was erected at a cost of \$75,000. President, Edgar Odell Lovett, Ph.D.

RICKER, MARILLA M. Woman lawyer and philanthropist, died November 12. She was born at Newdurham, N. H., March 18, 1840; educated at New London and taught school for several years. She studied abroad and after taking law courses in this country under private tuition, she was admitted to the bar of the District of Columbia in 1882. She practiced at Washington after that year and in 1884 was appointed United States Commissioner and Examiner in Chancery

by the District Supreme Court. In 1891 she was admitted to the bar of the Supreme Court of the United States. For many years she was known as the "prisoners' friend" from her practice of visiting and befriending prisoners, and also as an advocate of equal rights for women. During national campaigns she spoke in various States and was well known as a political writer. She also wrote on behalf of free thought in religion, defending Thomas Paine and Robert G. Ingersoll. Her books include: *The Four Gospels—The Gospel of Ingersoll, Paine, John Calvin, and Jonathan Edwards* (1911); *I do not Know, Do You?* (1916); *I Am Not Afraid Are You?* (1917).

RIDGELY, WILLIAM BARRETT. Banker, died, May 1. He was born at Springfield, Ill., July 15, 1858, and graduated at the Rensselaer Polytechnic Institute, 1879. He then engaged in mining, manufacturing, and banking in Springfield, Ill., until 1899, when he became the secretary and vice-president of a large iron and steel company. From 1901 to 1908 he was the United States Comptroller of the Currency. In politics he was a Republican.

RIGHI, AUGUSTO. Italian physicist, died in 1920. He was professor in the University of Bologna. He was regarded as among the most remarkable personalities in the field of pure science, combining the gifts of a popularizer with great capacity for original research. His contributions to physical science extended over a period of 50 years and number nearly 250 papers. He was a co-worker of Herz and a teacher of Marconi to whose great discovery he contributed invaluable aid.

RINALDINI, ARISTIDES. See ROMAN CATHOLICS.

RINDERPEST. See VETERINARY MEDICINE

RIPLEY, EDWARD PAYSON. Railway president, died February 4. He was born at Dorchester, Mass., Oct. 30, 1845; went into the railway service as a clerk in a Boston office in 1868 and from 1878 to 1886 was the general agent of the Pennsylvania Railroad. After Jan. 1, 1896, he was president of the Atchison, Topeka, and Santa Fe Railroad. He was also president of the Gulf, Colorado and Santa Fe Railway and director of the Continental and Commercial National Bank of Chicago, Ill.

RIP VAN WINKLE. See MUSIC, Opera.

RITTENHOUS, ELMER ELSWORTH. Writer on insurance, died, January 2. He was born in New York City, June 9, 1861; went to Colorado in 1880 and became a telegrapher; subsequently went to Korea where he engaged in railway construction and was correspondent for the New York Herald and its Paris edition, 1898. In 1902 he was special correspondent in Europe. From 1909 to 1912 he was president of the Provident Savings Life Insurance Society of New York and was commissioner of Public Service and Conservation in the Equitable Life Insurance Society after 1916. He wrote extensively on subjects of health and life conservation, and insurance.

RIVIERE, BRITON. British animal painter, died in London, April 20. He was born in London, Aug. 14, 1840, of French descent. After a private education he devoted himself to painting and was at first an enthusiast for the Præ-Raphaelite theories, but in this field he was not successful, and he finally applied himself to the

painting of animal life. In this he achieved a long series of successful and widely-known works.

ROADS AND PAVEMENTS. Although high prices and railway transportation difficulties were unfavorable to construction work, the recent vast American highway improvement programme was enlarged at many points and much road building went on. The states of New York and Illinois shut down new construction early in the year, but much work was done on old contracts. The Minnesota highway department advised county authorities to curtail their work. In California, State road building had to be halted because of the difficulty in floating $4\frac{1}{2}$ per cent road bonds, but at the November election the people authorized a higher interest rate, up to 6 per cent, with a State Highway Finance Board to fix the rate of interest of each new road bond issue according to current money market conditions.

Under Federal Aid, legislation and appropriations passed by Congress within recent years vast sums of money from the Federal treasury have been made available for road building, provided that the several states, their counties or other local governing bodies, would match dollar for dollar, the states organize for road supervision, and make the road work conform to Federal standards. Up to June 30, 1920, according to a bulletin issued by the United States Bureau of Public Roads, the Secretary of Agriculture had approved 2985 road projects, estimated to cost \$385,000,000, of which about \$164,000,000 will be Federal Aid. On the same date, 2116 projects calling for 15,944 miles of roads estimated to cost about \$200,000,000, had either been completed or put under construction. During the year, hundreds of millions of road bonds were rated by states and counties and a few score million were defeated. Some of the larger State issues voted were: Minnesota, \$75,000,000; Missouri, \$60,000,000; West Virginia, \$50,000,000. In addition, Virginia and Minnesota passed a constitutional amendment under which the respective legislatures may vote road bonds; Virginia up to \$50,000,000; while in Kansas no limit was named. The kinds of materials used for roads and also for city pavements is substantially as noted in earlier YEAR BOOKS. Increased attention is being given to the choice of a road or a street surfacing designed to meet the character and weight of traffic that is likely to pass over it. For special studies of "The Trend of Highway Development" in states chosen to represent various conditions and large geographical sections see a series of weekly articles in *Engineering News-Record*, beginning Nov. 11, 1920, and covering, up to the end of the year, Maine, Massachusetts, Rhode Island, Connecticut, Indiana, Michigan, Wisconsin, Minnesota, Nebraska, Kansas, and Arkansas. *Snow Removal* was given much attention during the year, being taken up systematically by numerous State highway departments in order to keep through highways passable in winter. *New York City*, after trying experience with heavy snows in the winter of 1919-20, bought many caterpillar tractors and snow plows for use in the winter of 1920-21.

ROBERTS, JOHN VARLEY. British organist, died, February 9. He was born near Leeds, England, Sept. 25, 1841, and took the musical degree from Oxford in 1871. He was organist in Oxford and other churches for many years and

published Church cantatas and various works on church music, especially the organ, and methods of training choristers, etc.; he also published about 60 anthems and a large number of songs.

ROBERTS, WILLIAM HENRY. Clergyman, died, June 26. He was born at Holyhead, Wales, Jan. 31, 1844, and came to this country in his youth and graduated at the College of the City of New York in 1863. He was statistician in the treasury at Washington and assistant librarian of Congress till 1871, when he prepared for the church. He was ordained in the Presbyterian ministry in 1873. From 1886 to 1893 he was professor of practical theology at the Lane Theological Seminary at Cincinnati, O. After 1884 he was stated clerk of the general assembly of the Presbyterian church in this country. He held other important offices in the church, being moderator of the Presbyterian general assembly in 1907; president of the Federal Council of Churches of Christ in America in 1908; and chairman of the conference on organic union (1918-19). He wrote a number of works pertaining to the history, system, laws and observances of the church. He edited the minutes of the General Assembly in 34 volumes, from 1884 to 1919, etc.

ROCHESTER, N. Y. See GARBAGE.

ROCHESTER, UNIVERSITY OF. A non-sectarian co-educational institution of the higher learning, at Rochester, N. Y.; founded in 1850. The enrollment for the regular fall session of 1920 was 413 men and 290 women. Students taking the extension courses numbered 166 men and 685 women. There were 70 members in the faculty, 12 of whom were new. The productive funds were: Arts and Science College, \$2,171,898; Ross Fund (Research work and study of nutrition), \$850,940; and Eastman School of Music (School now being constructed), \$2,234,509; total, \$5,257,347. The income for the year was: Arts and Science College \$210,000; Ross Fund, \$56,135; and Eastman School of Music (income from endowment only), \$100,000, totaling \$366,135. There were 81,500 volumes in the library. Mr. George Eastman added \$1,000,000 to his gift of \$3,500,000 for a School of Music. Of the total, of \$4,500,000, over \$2,000,000 was set aside for endowment and the balance of \$2,500,000 for real estate, buildings, and equipment. In addition to this gift to the Music School, Mr. Eastman gave \$4,000,000 which was supplemented by a gift of \$5,000,000 from the General Education Board for a School of Medicine, Dentistry, and Surgery. A campaign for endowment was conducted and \$915,000 was realized. The object of this endowment was: (1) To cancel indebtedness of about \$60,000, incurred during the years of war; (2) to add \$100,000 to the library fund; and (3) the income from the balance to be used to make an increase in the salaries of professors. The College of Arts and Science and the School of Music was started. A new School of Medicine, Dentistry, and Surgery was in process of organization. President, Rush Rhees, A.M., D.D., LL.D.

ROCKEFELLER PHILANTHROPIC BOARDS. The Rockefeller Foundation was chartered by the State of New York in 1913 "To promote the well-being of mankind throughout the world." Although its chartered purposes are thus unlimited, it has so devoted its resources to programmes of public health and medical education throughout the world, that

these have come to be regarded definitely as its fields. Its present resources in securities as reported at the end of 1920 are \$170,000,000, both the income and principal of which are available for appropriation. The Rockefeller Foundation accomplishes its work through (1) agencies which it creates to carry out specific programmes, and (2) other existing organizations unaffiliated with the Foundation, to which it makes appropriations to enable them to carry specific items of programmes in public health and medical education. Agencies of the first class are (1) The International Health Board; (2) The China Medical Board; (3) The Division of Medical Education.

The International Health Board has from the beginning been under the directorship of Mr. Wickliffe Rose. During 1920 the Rockefeller Foundation made available for the use of this Board approximately \$2,500,000. This was expended in public health demonstrations and in the development of coöperative public health programmes in different parts of the world. These programmes, always in coöperation with government authority, in 1920 were carried on principally in 12 Southern States in this country in combating malaria and hookworm disease, and in 22 foreign countries, states, or islands in combating these diseases and yellow fever. Marked progress in the eradication of yellow fever has been made during 1920. The disease has been completely stamped out in Guayaquil, Ecuador, which since 1740 has been an endemic centre. No case appeared after May, 1919. A yellow fever commission visited West Africa for a preliminary survey. Control measures have been undertaken in Mexico and continued in several countries of Central America, and in Brazil. The Board has thus extended its activities to every section of the world where yellow fever is known to exist. Assistance is being given to the Republic of Czechoslovakia in the organization of its public health administration and laboratory service. For the purpose of training native personnel and promoting greater efficiency and higher standards in public health, foreign fellowships for the study of public health in the United States have been provided. The International Health Board's Commission for the Prevention of Tuberculosis in France has continued, during 1920, its work begun during the war. As a part of its public health work the Rockefeller Foundation has directly established and is maintaining a School of Public Health at Johns Hopkins University.

The second subsidiary board of the Foundation, the China Medical Board, is charged with the development of the Foundation's programme of medical education in China. Dr. George E. Vincent, the President of the Foundation, serves as chairman and general director of this board. The China Medical Board has planned and is supporting in full a medical centre at Peking, including a medical school, free medical school, hospital, and nurse training school. Aid is given by the Foundation through the China Medical Board to medical schools and hospitals already established in China, and fellowships and scholarships are provided to make possible advanced medical study in the United States for medical missionaries on furlough and for Chinese physicians and nurses.

A Division of Medical Education under the directorship of Dr. Richard M. Pearce has been

created and has conducted investigations of medical education in Canada and western and central Europe. Increased activity in this field has marked the past year's work. Five million dollars has been set aside for aiding medical schools in Canada. Of this amount \$3,000,000 has already been distributed to six medical schools in the Dominion. A coöperative programme, involving contributions of approximately \$4,000,000 by the Foundation has been undertaken in connection with the medical centre in London composed of University College and University College Hospital Medical School. Emergency assistance in supplying American and British medical journals and in replenishing scientific equipment has been given to universities in central Europe.

The executive officers of the Foundation were: George E. Vincent, president, and Edwin R. Embree, secretary. The offices are at 61 Broadway, New York City.

The General Education Board was chartered by Congress in the year 1902 for the purpose of promoting educational progress in the United States. It possesses \$35,874,357 endowment and distributes an annual income amounting approximately to \$2,950,000. During the period 1919-1920, Mr. Rockefeller has increased the resources of the Board to the extent of \$70,000,000; giving a fund of \$50,000,000 to be used in assisting colleges and universities to increase teachers' salaries, and the sum of \$20,000,000 for the improvement of medical education. From this special gift of Mr. Rockefeller's for increasing teachers' salaries, the Board had up to July 1, 1920, appropriated \$19,635,707 towards a total to be raised by the institutions of \$59,769,041. From 1902-1919 the Board had contributed \$15,598,994 towards a total to be raised by the institutions of \$71,867,861. In the 18 years of its history the Board has thus contributed to college and university endowments upwards of \$35,000,000 towards a total increase of their endowments amounting to \$131,636,902. The Board has made appropriations aggregating \$18,178,021 for the development of medical education since its organization. Of this sum, \$13,061,747 was appropriated during the past year. Of this sum, the most considerable items are the following:

University of Rochester	\$5,000,000
Vanderbilt University	4,000,000
Washington University	1,577,500
Yale University	1,129,145
Harvard University	650,000
Meharry Medical School for Negroes	150,000
Howard University for Negroes	250,000

In the field of negro education, the Board has made appropriations to the endowments of four institutions, amounting to \$1,100,000, and it has made annual grants for increasing teachers' salaries, amounting to \$120,500. For improving the physical plants of six colleges for colored students, it has appropriated \$153,000 towards a total to be raised of \$385,125. Its total appropriations for the year to negro education are the largest ever made by the Board, aggregating \$2,291,737. Appropriations are also made for the equipment of county training schools and for the promotion of teachers' institutes, home makers' clubs and other related activities. The Board makes appropriations to the State Departments of Education for the purpose of employing rural school supervisors in the following

states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maine, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Following the school surveys of Maryland and Delaware, the Board has this year completed a survey of public education in the State of North Carolina, and has begun a survey of public education in Kentucky. The Board has also maintained the Lincoln School at Teachers College, an elementary and secondary school of experimental type. Fuller information regarding the activities of the Board will be found in its Annual Report for the fiscal year ended June 30, 1920, a copy of which will be sent upon request. The executive officers of the Board are Wallace Buttrick, president, and Abraham Flexner and Trevor Arnett, secretaries. Address, 61 Broadway, New York City.

THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Founded in 1901. This institute has three chief departments: laboratories of pathology, bacteriology, chemistry, pharmacology, physiology, experimental surgery, experimental biology, a hospital for the study of special problems in clinical medicine, both in New York City; a department of animal pathology, the former laboratories near Princeton, N. J. The Institute's publications are, *Studies from the Rockefeller Institute for Medical Research*, giving the results of various investigations made by them. A series of monographs published by the Institute include, the *Journal of Experimental Medicine*, the *Journal of General Physiology* and the *Journal of Biological Chemistry*. During 1920, John D. Rockefeller presented the Institute with a city block adjacent to their present building between 67th and 68th Streets on Avenue A, New York City. The return from war work has been completed and the Institute continued its work in the usual wide field of research during the year.

ROMAN CATHOLICS. One of the most notable incidents of the year was the constant development among the nations of the influence and prestige of the Pope as a factor in the affairs of the world. No less than 26 nations had established permanent diplomatic relations with the Vatican and special progress was made to restore the entente with France. There was also report of negotiations looking to the revival of the official representation from the United States that lapsed in 1868. A large number of the bishops of the United States visited the Pope to make their first official reports since before the World War and were received with marked favor, the pontiff praising on several occasions the loyalty and devotion of the church here. On August 1, the Pope issued a *Motu Proprio* warning against the dangers now threatening society. The World War let loose a flood of "naturalism," and men, running madly after the things of earth, have forgotten the Christian rules of life with which is bound up the family. Thence arise social troubles, good workmen being drawn into Socialism, the danger whereof the Pope points out, quoting his own letters to the Bishop of Bergamo and others, and Pope Leo's encyclicals, which showed workmen their duties as well as their rights. All should turn to the simple life of St. Joseph and the Holy Family as an example, because the family is the basis of Christian life. Another letter later drew attention to the destitution, especially among children, in central Europe and advising

charity and help for them. The American hierarchy took concerted action on this and ordered a general collection all over the country for this relief fund. To distribute it and to act as their representatives, the Right Rev. Mgr. Rempe, vicar-general of Chicago, started for Europe the last week of the year.

There were a number of great ceremonies at Rome incidental to the formal additions to the list of saints and martyrs: May 9, beatification of the Ven. Louise de Marillac, Foundress of the Sisters of Charity of St. Vincent de Paul; May 13, canonization of Blessed Margaret Mary Alacoque and of Blessed Gabriel dell' Addolorata; May 16, canonization of Blessed Joan of Arc; May 23, beatification of the Ven. Oliver Plunket, Primate of Ireland; May 30, beatification of the Ven. Anna M. Taigi, a Roman matron; June 6, beatification of the Martyrs of Uganda; June 13, beatification of the martyred Sisters of Charity of St. Vincent de Paul and of the Ursuline Nuns of Valenciennes killed during the French Revolution.

The Pope in June revoked the rule against foreign rulers visiting the Quirinal during a stay in Rome, and on December 18th the King of Denmark made a formal call at the Vatican, the first time in four and one-half centuries that a royal Dane had done homage to a Pope.

These Cardinals died during the year: Aristides Rinaldini, February 11; Philip Giustino, March 27; Julius Boschi, May 15; Leon Adolphe Amette, August 29; Victoriano Guisasola y Menendez, September 3; and Joseph Sebastian Netto, December 7. These deaths reduced the number of the members of the Sacred College to 59; or, 30 Italians, 28 non-Italians, and 1 "reserved-in-petto" member, thus leaving 11 vacancies to be filled. Not all the Cardinals are physically able to keep up with the duties of the office. As the successor of Cardinal Amette of Paris, on December 1st, Cardinal Louis Ernest Dubois, transferred from Rouen, assumed the duties of the see of Paris.

The deaths among the hierarchy of the United States included those of Bishop John E. Fitzmaurice of Erie, Pa., June 18; Bishop John Joseph Hennessy of Wichita, Kas., July 13; Bishop Thomas D. Beaven, of Springfield, Mass., October 5; Bishop E. A. Garvey, of Altoona, Pa., October 22. The death of the Rev. Theodore A. Metcalf of Boston in May left Cardinal Gibbons the only surviving American who attended the Vatican Council (Dec. 8, 1869-Oct. 20, 1870) where Father Metcalf acted as one of the stenographers and secretaries. Later he was vice-rector of the American College, Rome, and then chancellor of the Archdiocese of Boston. There were 698 members of the Council from all over the world present at the first session, Dec. 8, 1869, and of these at the close of 1920, Cardinal Gibbons was the sole survivor. The death of Cardinal Netto also made him the senior member of the College of Cardinals.

Other changes in the hierarchy were the appointment (January 19th) of the Rt. Rev. John J. McCort, titular Bishop of Azotus, and rector of the Church of Our Lady of Sorrows, Philadelphia, to be coadjutor of Altoona. He succeeded Bishop Garvey in October. The Rev. William F. O'Hare, S.J., of New York was consecrated Bishop of Jamaica, February 25, and the Rt. Rev. John M. Gannon, auxiliary bishop, succeeded Bishop Maurice in the see of Erie, Pa.

(August 27); the Rev. Francis J. Tief of Kansas City was named Bishop of Concordia (December 16th). These auxiliary bishops were appointed by the Pope: Rev. John G. Murray, Hartford, Conn (consecrated April 28th); Rev. Thomas E. Molloy, Brooklyn, N. Y. (June 28th); Rev. Patrick J. Keane, Sacramento, Cal. (September 12th). Bishops P. J. Nussbaum of Corpus Christi, Texas (April 28th), and J. F. R. Canerin of Pittsburgh, Pa. (November 29th), resigned their sees.

The archbishops and bishops of the United States met for their second annual conference at Washington, September 22-23, and took action on a number of questions the most important of which was that of education, on which it was decided:

First, that a general survey be made of the present condition of Catholic schools.

Second, that measures be taken for the more thorough preparation of teachers in all Catholic institutions, so that there may be an efficient body to carry out the directions of the hierarchy. Courses of education in seminaries and community training schools, and normal training of teachers for elementary schools, are especially desirable measures.

Third, that laymen be encouraged to take a larger share in Catholic education work, especially as teachers.

Fourth, that measures be taken to solve the problems of rural education.

Fifth, that in defining the Catholic attitude towards measures for State and Federal control, Catholics should give the minimum of complaint and of opposition to such movements. They should discriminate between things they can accept and those which they cannot accept—and then confine their opposition to the latter.

A seminary and a technical school for negroes is to be planned, as well as a national social service training school for laymen, the women's work to be systematized through the women's council.

Rural activities include plans to increase the number of Catholic farmers; the organization of social study clubs, and the selection of texts and programmes for their use; the encouragement of lecture courses in parishes and societies, and the encouragement of cooperative societies among farmers and consumers. Upon the National Catholic Welfare Council devolves the work of incorporating into our American life the vast number of Italians, Poles, Slovenes, Lithuanians, and other immigrant peoples. All these racial groups have their representatives in the several departments of the council. All foreign and domestic missions of the Church will be unified under the direction of the Catholic Board of Foreign Missions and unity of action in the management of Catholic hospitals will be governed through the Catholic Hospital Association. All Catholic men's societies will be affiliated with the men's council, the parochial unit to be the basis of the national organization. The inauguration of civic centres for young men, the development of the Big Brothers' movement for the care of the young and the establishment of international relations with Catholic societies of other countries are other items of this programme of activities and also the promotion of the beatification of Elizabeth Bayley Seton, founder of the Sisters of Charity in the United States.

On September 23d at Washington, 2 cardinals, 11 archbishops, 56 bishops, hundreds of priests,

and 10,000 of the laity were present at the laying of the corner-stone of the national shrine of the Immaculate Conception. It will be a Romanesque basilica, the dome 254 feet high, the length 420 feet; transept, 200 feet wide; nave, 54 feet; and front elevation, 124 feet. The interior will have 40 altars.

Important conventions of the year were the 17th annual meeting of the Catholic Educational Association in New York June 28th-July 1st, attended by a large body of educators from all sections of the United States. The problems of the parish schools, a constructive policy for higher education and standardization, were considered. At the public meeting on June 30th a brief by William D. Guthrie on "The Constitution and Catholic Education" was read. At the opening of the schools in September an estimated increase of 100,000 pupils was reported.

The Knights of Columbus held their 38th Supreme Convention in New York, August 2, 3, and 4, in which 300 delegates took part. On August 8th more than that number, led by Supreme Knight James A. Flaherty, sailed for France where they presented a bronze statue of Lafayette to France, and a jeweled baton to Marshal Foch. After this they went to Rome where the Pope received them in special audience on August 28th, during which he praised their work for charity, education, and patriotism, and expressed the hope that a branch of the order might be established in the Eternal City.

On September 17th the sixth biennial session of the National Charities Conference met at Washington with 1200 delegates attending. Every phase of Catholic social and charitable activity was represented. The technical and administrative problems of relief work, and social and economic questions were discussed, and conferences with a view of coördinating and unifying charitable work were held by the diocesan directors of 40 different dioceses. Catholic chaplains of penal institutions decided to organize a National Association of Catholic Chaplains for the development of their work and the enactment of uniform State laws relating to it.

The International Federation of Catholic Alumnae, representing Catholic women's schools of the country, met in Boston, October 8th-12th.

STATISTICS. The official Catholic Directory for 1920 gives the total United States Catholic population as 27,650,204 of which number 17,735,553 are in the United States proper. The priests number 21,019, of these, 5630 belonging to the regular orders. The churches total 16,181; the seminaries, 110, with 8944 students; the colleges and academies, 911; the free parish schools, 5852 with 1,701,213 pupils; the orphan asylums 296 with 45,687 inmates and the homes for the aged 121. There are 2 cardinals, 16 archbishops, and 96 bishops. There was an increase of 431 in the number of priests over the total of the previous year and of 1079 candidates for the priesthood, and 148 new parishes were established.

In the Dominion of Canada there is 1 cardinal, 11 archbishops, 29 bishops, 4500 priests, and 3,263,837 Catholics. A new diocese, Hearst, North Ontario, was created December 17th with Mgr. Halle as the first bishop.

The first Catholic daily newspaper in the United States printed in English, the *Daily American Tribune*, began publication in Dubuque, Iowa, July 1.

ROOSEVELT, FRANKLIN DELANO. Democratic candidate for vice-president in 1920. The last important office that he had held before his nomination was that of Assistant-Secretary of the Navy. He was born at Hyde Park, N. Y., Jan. 30, 1882; graduated at Harvard in 1904, and studied at the Columbia University Law School, 1904-7, being admitted to the New York bar in the latter part of 1907. He practiced in New York City from that time on. He was a member of the New York State Senate from 1910 to March 17, 1913, when he resigned to accept the position of Assistant-Secretary of the Navy. During the war he was in charge of the inspection of the United States naval forces in European waters, July-September, 1918, and of demobilization in Europe, January-February, 1919.

ROOSEVELT, SAMUEL MONTGOMERY. Portrait painter, died, August 19. He was born in New York City, in 1864, and studied there and in Paris. He painted the portraits of a number of prominent persons including Theodore Roosevelt, Hudson Maxim, the Earl of Kintore, etc., and was made chevalier of the Legion of Honor in France in 1914.

ROSS, CLINTON. Writer, died, March 26. He was born at Binghamton, N. Y., July 31, 1861; and graduated at Yale. He wrote a long list of novels and historical tales, including: *The Scarlet Coat*; *The Puppet*; *Two Soldiers and a Politician*; *The Break o' Day*; *Battle Tales*; *The Lady of the Blackfriars, or the Old Play* (1909); *A Tale of a Capitoline Venus* (1909); *Tontelle*; *The New Tale Book*; and a large number of serials and magazine and newspaper stories.

ROWING. The eight-oared crew of the United States Naval Academy won the world's rowing championship at the Olympic Games (q.v.) and also carried off the laurels in competitions with various college and amateur crews in the United States. Early in the season the oarsmen of Syracuse University defeated the Middies but later on the latter easily triumphed over their college rivals.

The intercollegiate regatta was revived in the United States in 1920 after a lapse of three years owing to the world war but instead of being held on the Hudson near Poughkeepsie as formerly over a four-mile course was contested on Lake Cayuga over a two-mile course. The 'varsity race was won by the crew of Syracuse University with Cornell second and Columbia third. The United States Naval Academy did not take part in the regatta. Cornell was victorious in both the junior varsity and freshmen events, Syracuse finishing second in each instance.

The annual championship regatta of the National Association of Amateur Oarsmen of America was held on Lake Quinsigamond, Worcester, Mass., the United States Naval Academy capturing the eight-oared event. The winners in other contests were: junior eight-oared shells, Duluth Boat Club; intermediate four-oared shells, Duluth Boat Club; senior international four-oared shells, Philadelphia Barge Club; quarter-mile dash, Jack Kelly, Vesper Boat Club, Philadelphia. Kelly also won the national singles title and with his cousin, Paul Costello, captured the doubles honors.

Harvard defeated Yale in their annual dual regatta held on the Thames, near New London. In foreign regattas Toronto University won the

eight-oared shells in the Royal Canadian Henley at St. Catharines, Canada, and the Leander Boat Club defeated Magdalen College, Oxford, in the English Henley.

Ernest Barry regained the world's professional sculling championship by defeating Alfred Felton, title holder, in a race held on the Parramatta River, New South Wales.

ROWLAND, JAMES. British member of Parliament, died March 1. He was born Oct. 1, 1851, and was educated in workingmen's colleges. He was at first a watch maker's apprentice, but devoted himself to politics and became prominent in the London Municipal Reform League. From 1886 to 1895, he was member of Parliament. He was active in the international arbitration movement and in promoting bills in Parliament for land reform and housing improvements.

ROZE, RAYMOND. English dramatic composer and conductor, died in London, January 4. He was born there in 1875, a son of the famous singer, Marie Rôze-Ponsin. Having graduated from the Brussels Conservatory as winner of the first prize, he became musical director to Sir Henry Irving at the Lyceum Theatre, and later to Sir Herbert Beerbohm-Tree at His Majesty's Theatre. In these positions he wrote a great deal of incidental music, especially for Shakespeare's plays. In 1913 he gave at Covent Garden a season of opera in English, during which he produced his own *Joan of Arc*. A second opera, *Arabesque*, was produced at the Coliseum in 1916.

RUBBER. With the unsettled economic and political conditions of such a year as 1920 it was inevitable that an industry so widely distributed as the production, distribution, and manufacturing of india rubber should reflect conditions both international and local. In the first half of the year in rubber as in other industry, the inflation that had developed since the armistice naturally was in evidence and a peak of high prices and demand was reached as will be apparent on reference to the statistical tables on the opposite page. Then came the deflation and descending prices until by the end of the year values were but 50 per cent of those prevailing six months earlier not only for crude rubber, but for many of the finished products. Concurrently there was a decline and liquidation in the securities representing the various companies in the industry and the financial condition of several became quite acute. Necessarily there was curtailment of production with unemployment or reduced wages at rubber centres. Notwithstanding the reduced production of the latter part of the year there was at the end a considerable surplus, for Europe was in no position to be an active customer, while there was a lack of confidence that the American demand would return immediately in full vigor. The estimated consumption of crude rubber in the United States in 1920 was less than 225,000 tons in place of some 300,000 tons which at the beginning of the year the more confident authorities expected might be absorbed. Furthermore, when a normal supply of crude rubber in the United States at the end of the year would be about 75,000 tons at the end of 1920 it ranged from 100,000 to 125,000. Furthermore, the prices had fallen to below the cost of production and for crude rubber (first crepe) the fall was from a high point of 55 cents to 16½ cents at the end of the year. Here it must be

RUBBER

LOWEST AND HIGHEST NEW YORK SPOT RUBBER PRICES, 1920 (India Rubber World)

	January	February	March	April	May	June	July	August	September	October	November	December
First latex.....	51@55 1/2	45 1/2 @ 51 1/2	46 @ 48 1/2	42 1/2 @ 46 1/2	38 @ 43 1/2	37 1/2 @ 39	30 @ 35 1/2	29 1/2 @ 33 1/2	24 1/2 @ 29	21 @ 26	18 1/2 @ 21	16 1/2 @ 19 1/2
Smoked sheets.....	51@55	45 @ 56 1/2	46 @ 48	42 1/2 @ 45	38 @ 43	37 1/2 @ 39	29 1/2 @ 35	29 1/2 @ 33 1/2	23 1/2 @ 28 1/2	20 @ 24	17 1/2 @ 19	16 @ 18 1/2
Upriber fine.....	45@50	42 1/2 @ 45	41 1/2 @ 48	40 1/2 @ 42	38 @ 41 1/2	36 1/2 @ 38 1/2	34 1/2 @ 35 1/2	30 @ 35	26 @ 30	23 1/2 @ 26	20 1/2 @ 23	18 @ 20 1/2
Upriber coarse.....	34@37	31 1/2 @ 34	31 1/2 @ 31 1/2	30 @ 32	29 1/2 @ 30 1/2	27 1/2 @ 28 1/2	22 @ 32	20 @ 27	16 1/2 @ 21	15 @ 16 1/2	14 1/2 @ 15 1/2	14 @ 15

UNITED STATES CRUDE RUBBER IMPORTS, 1920 BY MONTHS (Compiled by The Rubber Association of America, Inc.)

	1920	Plantations	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Balata	Miscellaneous gum	Waste	1920	Total
January.....	17,799	2,650	821	111	...	34	...	65	634	851	22,401	7,235
February.....	29,681	2,468	558	285	...	...	...	67	614	309	33,984	17,456
March.....	28,538	2,468	514	23	...	114	...	13	988	1,252	38,898	28,328
April.....	21,086	1,893	658	29	...	79	...	22	812	448	24,957	28,348
May.....	24,443	2,025	662	95	...	113	...	45	1,059	224	28,666	16,319
June.....	12,911	1,352	427	27	...	164	...	7	552	166	15,606	11,067
July.....	14,695	1,115	34	40	...	...	...	8	1,288	312	17,487	11,067
August.....	12,780	590	13	75	...	156	...	67	1,185	800	15,066	11,067
September.....	10,974	459	98	8	...	74	...	44	516	218	12,414	14,086
October.....	8,759	1,613	27	17	...	223	...	48	498	425	11,595	28,888
November.....	5,695	654	39	12	...	48	...	68	27	608	7,151	15,674
December.....	9,716	1,151	59	11	...	32	...	42	...	876	11,486	24,675
Total, 12 months, 1920.....	196,972	18,391	3,881	713	1,037	86	481	8,118	4,980	234,668	226,032	226,032
Total, 12 months, 1919.....	192,270	27,056	8,840	1,452	1,501	441	...	...	...	...	...	...

* During 1919 there were actually received 231,510 tons, of which 5,478, not reported until 1920, are not included in figures published for either year.

remarked that the development of rubber plantations in the East had brought many changes in the industry for where \$1.50 once was an average price for Para rubber (reference to the 1910 YEAR BOOK will show a price of \$2.90 in New York in April, 1910), at the end of 1920, it was 18½ cents. Naturally such conditions aroused considerable concern in South America which, once the chief source of supply, formerly was able to control the world's crude rubber industry. Resentment here was but feebly disguised and the argument was advanced that the low prices were due to the world control of the markets by American trusts. But the condition was universal and there was a tendency to decrease production in the East. In fact, during the year a substantial restriction of the plantation rubber industry which long had been contemplated was determined on. The Council of the Rubber Growers Association of London recommended the curtailment of the estimated normal monthly output by 25 per cent. The planters were left free to either leave untouched one quarter of their tapping area or tap the trees in the entire tapping area only on every other day. Some 80 per cent of the proprietors of the 3,000,000 acres planted with rubber agreed to this plan, which was to be in force from Nov. 1, 1920, to Jan. 1, 1922, though the arrangement was subject to modification with changes in market, industrial, or other conditions affecting prices, production, or supply. This action was taken in view of the unstable and unsettled condition of the world's market for crude rubber which had suffered from a combination of all untoward economic symptoms prevailing in commerce and industry. In fact, where a boom had been anticipated after the war by some rubber authorities the industry was face to face with price recessions which reached a point perilously near actual costs of production such as 10d. a pound in London. It was realized, however, by the best minds in the rubber world that any artificial measures must be at best temporary and the eventual solution only would come through natural processes and industrial improvements.

In 1920 manufacturers in the United States consumed some 70 per cent of the world's rubber production of the world, but had a comparatively small interest in the plantations on which it was produced. It was estimated that American rubber manufacturers owned about 150,000 acres of rubber plantations in the East representing an original investment of between \$15,000,000 and \$16,000,000, which by 1920 had practically doubled in value, but represented only about 3 per cent of the world's total investment in rubber plantations. There was furthermore, a tendency that this American interest in the East would develop, especially with the growth of American foreign commerce and shipping. At any rate the distribution in 1920 of such American interests is of some interest.

The large American plantation holdings at this time were divided among four corporations. The United States Rubber Company with \$10,000,000 invested in Sumatra, had 43,000 acres bearing, 11,000 planted but not bearing, and 63,000 reserved, totaling 117,000 acres. This was the largest single rubber plantation in the world, nevertheless its production was far

inadequate for its 41 factories in the United States, 16 in Canada, and one in England. Next came the Goodyear Tire & Rubber Company with investments of about \$4,000,000 in 20,000 acres in Sumatra, of which 2000 were bearing, 9000 planted but not bearing, and 9000 cleared but not planted. The Manhattan Rubber Manufacturing Company had 2000 acres worth about \$500,000 in Java, 1200 of which were bearing, and 800 planted; while the Continental Rubber Company was the owner of 20,000 acres in Sumatra on which it had expended about \$1,000,000; 2000 acres being planted but not bearing, 2000 acres cleared but not planted, and 16,000 reserved.

One of the notable features of the year in the American rubber manufacturing industry was the over-production of pneumatic automobile tires which had been widely distributed in excess of the slackening demand. This led to the very necessary reduction of the stocks of dealers and manufacturers and the curtailment of production causing the shutting down in whole or in part of many plants and general demoralization in the trade, the rubber companies whose principal product was tires suffering, and in one notable case bankruptcy was only averted by the intervention of the creditors, banking, and other interests.

The condition of the crude rubber market in 1920 is reflected in the accompanying statistical table showing the lowest and highest prices by months for spot rubber at New York. The decline through the year is most apparent and it is worth recalling that in August, 1914, the finer grades sold above 120, while at the beginning of 1913 they ranged from 102 to 113 with uprun coarse rubber selling for from 76 to 84. The table of imports also tells its story and indicates the sources of the world's rubber and their relative importance under conditions as developed by 1920.

In rubber the export business was carried on with greater difficulty during the year on account of exchange conditions and the increasing value of the American dollar outside of the United States. However, improvement in such conditions was anticipated at the end of the year.

As regards its rubber manufacturing industry by 1920 Canada had not only become "self-supporting" but was developing an export trade. The total capital invested in the Canadian rubber industry in 1919 amounted to \$42,787,594. Of this sum \$33,005,888 was in Ontario, which is the centre of the industry and boasts of 18 plants producing miscellaneous rubber goods, and 5 turning out rubber boots and shoes. Quebec had 3 plants producing rubber goods and 5 in the rubber boot and shoe industry, supported by capital amounting to \$9,763,333. British Columbia's one rubber plant produces miscellaneous rubber goods, representing an investment of \$18,373.

Canada's rubber industry furnishes employment for 12,677 persons, with 9334 men and 3343 women workers. Rubber goods plants employ 6835, rubber boot and shoe factories, 5842. The wages paid during 1919 totaled \$11,547,817, of which \$7,004,028 was paid to rubber goods employees and \$4,543,789 to rubber boot and shoe makers.

The cost at the works of materials used during 1919 in the rubber goods factories is re-

turned as \$19,671,453, while the value at the works of rubber goods produced during the year is given as \$38,651,640; similar figures for the rubber boot and shoe factories give costs as \$7,862,961 and products valued at \$19,351,794.

The exports of Canadian rubber products increased in value from \$722,905 in the fiscal year 1914-15 to \$10,069,963 in 1919-1920, in which year tires to the value of \$7,391,777 were included, of which \$3,547,601 went to the United Kingdom.

Reference has been made to the serious condition of the rubber industry in South America. In Brazil at the end of 1920 there was in the Amazon region, one of the worst crises in the history of its rubber industry. Production of rubber had fallen off by 22,000 tons, but what was even more serious exports for the first 10 months of 1920 showed a shrinkage of 7013 tons, with both Europe and America decreasing their imports. The price of hard fine Pará dropped 40 to 50 per cent from January, 1920, to the end of the year and rubber was being shipped at a loss. Government aid was asked by the suffering states with the possible alternative of suspending payments.

The Amazon rubber interests gave the chief causes of this condition as eastern competition and American speculation working for lower prices. It was charged that a United States "rubber trust" was driving down the price of rubber, forcing the native planters out of the field and then purchasing the plantations at very low prices. The Brazilian rubber interests claimed that the opening of the World War in 1914 gave to America a virtual monopoly of the rubber industry.

Official statistics of the rubber industry in British Malaya derived from estates of 100 acres and over in extent, enable a comparison of the industry in Federated Malay States on December 31 in 1918 and 1919 to be made:

	1918	1919
Number of estates	1,126	1,221
Acres in possession	1,094,217	1,167,043
Acres planted	672,106	736,742
Acres producing	447,175	490,372
Newly planted	50,484	64,636

Adding the above figures to the statistics for the Straits Settlements, Johore, Kelantan, Kedah, and Trengganu, the totals were as follows:

	1918	1919
Number of estates	1,714	1,896
Acres in possession	1,978,000	2,091,535
Acres planted	1,124,243	1,236,806
Acres producing	691,435	751,986
Newly planted	78,423	108,438

In 1919, the rubber crop in the Federated Malay States amounting to 73,684 tons as against 62,517 tons in 1918, and the figures for the whole of British Malaya over a period of 10 years were as follows:

	Tons		Tons
1910	6,414	1915	51,885
1911	11,117	1916	67,677
1912	18,956	1917	82,319
1913	28,169	1918	92,279
1914	37,408	1919	106,757

The total export of plantation rubber from the Federated Malay States alone, amounted to 108,393 tons in 1919 as against 78,283 tons in 1918 and 79,831 tons in 1917. The discrepancy

between a rubber crop for the whole of British Malaya in 1919 of 106,757 tons and an export of 108,393 tons from the Federated Malay States alone possibly being due to the holding back of part of the previous year's crop for lack of shipping facilities. Upon estates of 100 acres and over in extent in the Federated Malay States there were 234,195 laborers employed.

Ceylon also showed an increased rubber area the plantation acreage in 1919 being given below:

	Estates over 15 acres	Small holdings	Total acres
Acres in rubber tapping, Sept. 1, 1919	253,930	13,032	266,962
Acres in rubber over 5 years of age but not in tapping, Sept. 1, 1919 ..	20,752	3,552	24,304
Acres in rubber over 1 year and under 5 years of age not in tapping, Sept. 1, 1919	61,416	20,875	82,291
Acres of 1-year-old rubber ready for planting	13,392	10,945	24,337
Acres of land cleared ready for planting	7,132	.....	7,132
Totals	356,622	48,404	405,026

Of the areas of over 15 acres, belonging to planters' associations, the total acreage was 285,539 distributed over 21 planting districts of which the most important were: Galle, 23,858; Kalutara, 52,197 acres; Kandy, 24,885 acres; Kegalle, 18,966½ acres; Kelani Valley, 50,734½ acres; Matale, 39,086 acres; Sabaragamuwa 27,973 acres. The total acreage of estates not members of associations was 71,083, distributed over 11 districts. The Ratnapura district was credited with greatest plantation acreage, 19,017½, but Kalutara had the highest acreage in tapping, 7,039½, although its total was but 7,039½ acres.

RUDD, CHANNING. Financier, died November 9. Before his death he had been in charge of the Government Loan Organization of the Federal Reserve Bank of New York. He was born at Tiskilwa, Ill., in 1875, practiced law and for a time taught it at Columbia and New York Universities. He became associated with the Federal Reserve Bank in 1918.

BUFFO, TITTA. See MUSIC, OPERA.

RUHR BASIN. The Ruhr basin was the power plant of Germany's former industrial and military machine. The Peace Treaty stipulation that Germany must not construct fortifications within "50 kilometers to the east of the Rhine" loosened her absolute control over one of the richest coal fields in the shattered empire, over Ruhrort, which had the largest river harbor in Europe, over the factory cities along the Ruhr's course, and, above all, over Essen, city of the Krupp cast-steel and cannons. The confluence of the Ruhr and the Rhine was the geographic factor in making Ruhrort comparable in economic importance to Pittsburgh, though only one-twelfth its size. Between the Rhine and the Ruhr is Duisburg, a city of rolling mills, foundries, and factories. It is connected with the Ruhr by a canal. Essen owes its development to the Krupp works founded in 1812. In 1848 they had only 70 employees; but with the advent of railways and cast-steel guns they expanded rapidly. Mulheim is a railway centre, seven miles northwest of Essen, where convergence of rail and water routes brought an enormous traffic. Four miles east of Essen is another Ruhr

river port, Steele, a mining town with iron and steel works, also noted for its fireproof bricks. Farther up the Ruhr is Witten, important not only for steel, but also for beer, soap, and chemicals. Within the area of the disturbances in 1920, though it is on the Rhine, a scant five miles south of the Ruhr's mouth, is Düsseldorf. This is one of the most pretentious cities in western Germany. It was bombarded by the French in 1795, later was the capital of Berg when that State was a Napoleonic duchy, and passed to Prussia, with the rest of Berg, in 1815. The Ruhr basin coal fields not only were important to the German Empire because of their heavy production, but because they alone were accessible for water importation of ores. A canal connected Dortmund, a city of the Ruhr basin with the Ems River, thus affording an outlet directly to the North Sea at Emden. A by-product of this development of water transportation to care for the coal-mining and the attendant iron and steel industry, was the growth of textile manufactures. In cotton spinning the Ruhr basin held first place in Germany. Nearly a third of the spindles in the Empire were located here. The Ruhr was made navigable from the Rhine to Witten, some 43 miles, by means of locks. Even then low water frequently hampered navigation. See WAR OF THE NATIONS.

RUMANIA. A constitutional monarchy situated on the Black Sea; separated from Hungary by the Carpathian Mountains and the Transylvanian Alps; from Bulgaria by the Danube River; and from Russia by the Pruth River. Capital, Bucharest. Before the late war it comprised the former principalities of Moldavia and Wallachia, and the territory of the Dobrudja, but as result of the war Bessarabia was joined to it in March, 1918; Bukovina in November, 1918; and Transylvania in December, 1918. The area and population as estimated in the following paragraph are subject to some uncertainty as the precise limits had not been permanently determined at the close of the year, 1920.

AREA AND POPULATION. Before the war the area was given at 53,489 square miles and the population at 7,516,418, including the territory taken from Bulgaria by the treaty of Bucharest, Aug. 7, 1913. The additions resulting from the war brought the country to an estimated area of 122,282 square miles and an estimated population of 17,393,149. The distribution by divisions at the beginning of 1920 is shown in the following table from the *Statesman's Year Book* of 1920:

Country	Area in sq. miles	Population		Total
		Males	Females	
Old Roumania	53,489	3,989,606	3,914,498	* 7,904,104
Bessarabia	17,146	1,198,900	1,145,900	2,344,800
Bukovina	4,030	395,963	404,135	800,098
Transylvania	22,312	1,350,480	1,327,887	2,678,367
Crisana	8,038	659,836	657,145	1,316,981
Maramuresh	6,258	378,205	388,461	766,666
Banat	11,009	789,102	793,031	1,582,133
Total	122,282	8,762,092	8,631,057	17,393,149
* Estimate for 1915.				

The capital, Bucharest, had a population Jan. 6, 1917, of 308,987; and the other large towns with their population for 1914 are: Chisanau, 114,100; Cernauti, 87,128; Jassy, 76,120; Galatz, 73,512; Timisoara, 72,223; Braila, 65,911.

COMMUNICATIONS. Railway mileage in 1915

was 2313, all lines being operated by the State. The following information in regard to recent railway conditions was based on a report of the British Railway Commission to Rumania, published in 1920. The railway situation in Rumania after the signing of the armistice was exceedingly bad and there was much suffering throughout the country owing to lack of food and fuel. The limiting factors were lack of railway repair material and locomotives. Some relief was obtained by a loan from the British government of £500,000 (later reduced to £250,000) for the purchase of railway materials, and the promise of 100 locomotives from France. But in 1920 the railway situation did not materially improve. The efforts of Rumania to obtain loans for the reconstruction of the railways and the purchase of locomotives had little success.

The following report as to transport condition was made by an Austrian observer at the close of the year: The transportation difficulties that beset middle Europe were specially acute in Rumania. Reports that railway siding were filled with unused locomotives, were doubtless true, because the locomotives were unusable and Rumania had not the facilities to repair them. The need was estimated by some at 3500 locomotives and others at 7000, while there were but 240 in condition to use. In the Danube harbor of Giurgiu there were 500 car-loads of Austrian products which could not be moved to Bucharest for lack of sufficient rolling stock. Between Hungary and Rumania there was practically no freight traffic, and only an occasional freight train came through in transit from Austria, while, except for infrequent automobiles, passenger traffic was at a standstill. There was no communication by mail, telegraph, or telephone. Telegrams between the two countries had to be routed via Hamburg or Rotterdam if they were to reach their destination at all, and it was estimated that 70 per cent of them never arrived. This condition had obtained for a year and a half. When a train of freight cars crossed the border an equal number of cars had to cross in the other direction; and if a 10-car train met for exchange a train of 11 cars one car had to be detached and wait until another car could be delivered in return. Traffic with Rumania via the Danube, while theoretically unobstructed, was in practice beset with difficulties, as each frontier levied its own toll of fees. It was reported that fees extracted legally, high as they were, fell considerably below the illegal tolls.

The military department did excellent work

toward the reconstruction of the economic life of the country by means of its so-called army of construction which was employed mainly in repairing old roads and in building new ones. An elaborate system of automobile highways was projected. On them the government oper-

ated a general truck service. The work of repairing oil-pipe lines in the devastated regions was also carried on by the army.

PRODUCTION, ETC. The leading occupation is agriculture, about 80 per cent of the inhabitants being engaged in it. A little over 50 per cent of the cultivable land area was in holdings of under 247 acres. The chief crops are: Wheat, corn, barley, oats, and rye. The following information in regard to agricultural production was supplied by the Bureau of Foreign and Domestic Commerce, in 1920:

The area sown to cereals in Old Rumania, Bessarabia, Bukowina, and Transylvania in the autumn of 1919 was given in hectares [hectare=2.471 acres], as follows:

money than the Kingdom of Rumania had formerly. This was caused largely by hoarding on the part of farmers and others, and produced a money stringency which made credit difficult to secure and restricted industrial development and expansion.

FINANCE. No recent figures for finance were available. In 1916-17, the budget balanced at 645,719,300 lei. The public debt according to a British authority was £210,680,000. The fiduciary circulation in 1920 was placed at 10,000,000,000 lei and the government was planning measures which were expected to reduce it to 4,000,000,000. Much dissatisfaction was expressed by Rumanian writers over the agreement reached by the Allies at the conference of

<i>Cereals</i>	<i>Old Kingdom Hectares</i>	<i>Bessarabia Hectares</i>	<i>Bukowina Hectares</i>	<i>Transyl- vania Hectares</i>	<i>Total Hectares</i>
Wheat	697,181	338,694	8,347	598,221	1,642,893
Barley	14,015	2,950	.....	65,851	82,816
Rye	49,509	108,803	15,608	23,798	197,508
Colza	12,507	406	.....	1,120	14,033

The spring sowing of 1920 was given as follows:

Spa and the contrast was pointed out between the allowance to Rumania, Serbia, and Greece of

<i>Cereals</i>	<i>Old Kingdom Hectares</i>	<i>Bessarabia Hectares</i>	<i>Bukovina Hectares</i>	<i>Transyl- vania Hectares</i>	<i>Total Hectares</i>
Wheat	28,588	99,628	2,881	18,627	144,719
Barley	446,517	614,120	26,847	27,745	1,115,229
Rye	771	6,682	1,743	518	9,714
Coisa	13,546	8,598	.....	.....	17,144
Corn	825,818	584,552	49,583	182,985	1,592,938
Oats	419,782	182,065	29,118	59,812	690,727
Millet	19,559	1,050	.....	.....	20,609
Flax	6,528	2,197	.....	.....	8,720

Rumania's cereal crop for 1920 was estimated at 15,000,000 tons, 11,000,000 of which would be available for export: and its forest production at 5,500,000 tons, 2,000,000 of which would be available for export. Of the 750,000 square meters of oil fields, only 100,000 meters, or 13 per cent, were under exploitation. It was estimated that when all oil fields were put under exploitation, production would reach over 2,000,000 tons per annum.

From the report of an Austrian expert it appeared at the close of the year that Rumania had enough cattle and other live stock to provide for all domestic needs and an exportable surplus. The Transylvania section of Rumania was able to produce enough food to supply the entire country, leaving the rest free for export. Lumber was an important item of export, the capacity being 100,000 cars yearly (car-load, 10 tons). In 1912 Bukowina alone produced as much lumber as the entire country produced in 1920. Twelve thousand carloads of petroleum were taken out of Rumania by the Germans despite the damage done to oil wells by the British in their evacuation. In 1914 a well could be bored for 300,000 lei, whereas 5,000,000 lei are now required. Fifty per cent of oil refined was available for export. See PETROLEUM. Forest area is 6,539,920 acres of which 2,712,582 are owned by the State. See AGRICULTURE.

COMMERCE. No later figures for the foreign trade were available than those given in the preceding YEAR BOOKS. In 1920, the two greatest difficulties of trade with Rumania were difference in exchange rate and transportation. There seemed to be no inflation of Rumanian currency, possibly because Rumania possessed no note press, and the whole of Rumania had less

4 per cent of the Austrian indemnity, which as everybody knew could not be paid and the allowance to Rumania of only 1 per cent of the German indemnity. The agreement with the British government on the other hand was generally approved. This involved the postponement of payments on Rumania's war debt. The British government also consented to pay for the damages done to Rumanian oil wells during the war.

DEFENSE. Military service is compulsory between the ages of 21 and 46. The army of Rumania was reduced to 30,000 men by the treaty of Bucharest and during the war it was under the control of the Germans. After the armistice, a partial mobilization took place and after the entry of the Allies into Bucharest, about 400,000 Rumanian troops were reported as under arms. See NAVAL PROGRESS.

GOVERNMENT. In 1920 a Constituent Assembly elected by universal direct suffrage was engaged in unifying the constitutions of the former kingdom and the newly added parts. Executive power is in the king, Ferdinand I (born, Aug. 21, 1865) who acts through a responsible ministry; legislative power is in two houses, namely, the senate, consisting of 170 members of whom 82 were from the old kingdom, and the chamber of deputies, consisting of 347 members of whom 168 were from the old kingdom. The ministry in 1920 was constituted as follows: Premier, General Avarescu; Foreign Affairs, M. Take Jonesco; Interior, M. Argetoianu; War, General Rascano; Public Instruction, M. Negulesco; Fine Arts, M. Octairan Goga; Public Works, General Valiano; Finance, M. Titulesco; Agriculture, M. Cudalbu; Labor, M. Trancu Jasi; Justice, M. Cantacuzene; Industry and Commerce, M. Octairan Taslavanu; Reconstruction and Food Supply, M. Ataudiu;

Bukowina, Baron Starcia; Transylvania, M. Mosconyi; and Bessarabia, M. Nita.

HISTORY

MINISTERIAL CRISIS. Considerable opposition had developed against the government and in February the by-elections to the senate resulted in the success of its opponents. On March 15 the cabinet resigned and a new government was formed under General Averescu, who had been minister of the interior in the retiring cabinet. The new ministry was based on the Conservative and Liberal parties of the old kingdom. Its programme was founded on the idea of a Greater Rumania and embodied features looking to the centralization and economic reconstruction of the State. On March 27 parliament was dissolved and a new election ordered. The government granted a general amnesty, April 18. Dissatisfaction was caused in Transylvania by a reduction of the number of deputies, as this resulted in a loss of seats out of proportion to the population. The policy of centralization was carried out in the reorganization of the State into departments under prefects who were nominated by the central government. This involved the dissolution of the national councils of Bukowina, Transylvania, and Bessarabia.

LAND REFORM. In the autumn a committee of agrarian reform was at work on a plan for the better distribution of land among the peasants. The budget for the fiscal year 1920-21 appropriated 90,000,000 lei for that purpose. The new land law provided for the expropriation of all landed estates of more than 500 hectares held by individuals in the old kingdom of Rumania and of all such estates over 100 hectares in Bessarabia, Transylvania, and Bukowina. In the first place, the estates to be expropriated were those held in mortmain. The lands held by the Orthodox Church had already been largely distributed. The cost was to be paid to the extent of 65 per cent by the peasants and 35 per cent by the State and a period of 45 years was allowed for payment. There was much opposition to this measure on the part of some of the churches, but it was generally accepted because all the land taken was to be paid for on the basis of pre-war values.

CONDITIONS AT THE CLOSE OF THE YEAR. Early in December a bomb explosion in the Rumanian senate was reported, resulting in the death of two prelates, a general and several others. At the same time it was said that the prisons were full of political suspects and that martial law had been established. Economic conditions were reported to be serious and though Rumania had long been known as the granary of the Balkans it was said that she had not sufficient foodstuffs for her own need, owing especially to the falling off in production after the division of the land estates into small peasant holdings. In the outlying parts of the territory which had formerly belonged to Russia and Austria-Hungary, conditions were reported to be worse than they had been under the old régimes. It was announced at the end of the year that the king had called to the colors a large number of troops and had militarized the railways. There were reports at that time that divisions of the Bolshevist army were on the Dniester front and it was believed that hostilities between the Rumanians and the Bolshevists would soon break out. The im-

mediate cause was the question of Bessarabia, which was still claimed by the Russian government.

On August 22-23, the crown prince, Carol, was received with public honors in the City of New York during a visit to the United States.

RUMANIAN. See PHILOLOGY.

RURAL POPULATION. See AGRICULTURE.

RUSSELL, Sir EDWARD, (LORD RUSSELL OF LIVERPOOL). British journalist, died at Liverpool on February 20. He was born in 1834 and after serving in minor capacities as a newspaper man, became editor of the Liverpool *Daily Post* which office he held for 40 years. In 1885 he became a member of Parliament, but retired after two years service. He was knighted by Mr. Gladstone in 1893 and was created a baron in 1919. His editorship of the *Daily Post* was remarkably successful. He was intimate with many of the prominent statesmen of the time, including Mr. Gladstone, Mr. Chamberlain, and Lord Roseberry, with whom he corresponded and he was also well acquainted with the great personalities of the theatre. He wrote much on the drama and was one of the first critics to recognize the merits of Sir Henry Irving. He wrote besides a volume of reminiscences and many pamphlets on Shakespearian and other literary subjects, *An Editor's Sermons* (1901); *Arrested Fugitives* (1912); and *A Speculation on Hypothesis in Religion* (1915).

RUSSELL, Sir THOMAS WALLACE. British civil servant, died, May 2. He was born in Scotland, Feb. 28, 1841, and from 1864 to 1862 interested himself in temperance propaganda. In 1894 he was one of the chief promoters of the Land Acts' Committee, and was the founder of the new land movement in Ulster. He was member of Parliament from Ireland from 1886 to 1911, and from 1907 to 1916 he was Vice-President of the department of agriculture and technical instruction for Ireland. He wrote: *Ireland and the Empire: A Review* (1890-1900); and *The Irish Land Question Up-to-date*.

RUSSELL SAGE FOUNDATION. This foundation was organized in 1907 for the improvement of social and living conditions in the United States. The endowment, about \$15,000,000, was given by Mrs. Russell Sage in memory of her husband. The Foundation is primarily an educational institution. It does not attempt to relieve individual or family need or to duplicate the work of existing social agencies. It studies and interprets facts with regard to social conditions and methods of social work, makes this information available by publications, conferences, and other means of public education and seeks in various ways to stimulate community action for social betterment.

The departments with their directors are at present: Charity Organization, Mary E. Richmond, Child Helping, Hastings H. Hart; Education; Industrial Studies, Mary Van Kleeck; Publications, Frederick W. Jenkins; Remedial Loans, Statistics, Surveys and Exhibits, Shelby M. Harrison.

Following the digest of American Marriage Laws, published in 1919, the Charity Organization Department has begun an extensive study of the administration of laws, in selected states having sharply contrasted marriage laws. New and important material has already been collected and it is expected that when published the summary of facts will be of service to social

case work agencies, civic and legislative bodies, and others interested in the administration of marriage laws. Books in preparation include, *What is Social Case Work*, *Office Methods in Social Work*, and *The Social Case Work History*, by Ada Eliot Sheffield.

The Department has continued its work of teaching in the field of social case work. A four weeks Institute of Family Social Work for Students who wished to supplement practical experience in charity organization societies was held as well as a Conference of Case Work Supervisors from 12 cities. The Department conducted two exchanges made up of 40 charity organization societies which interchange their printed material and continued as agent for the Committee on Transportation of the National Conference of Social Work.

A comprehensive investigation of child welfare in the District of Columbia was made by C. Spencer Richardson, Associate Director of the Department of Child Helping. The organization, equipment, and administration of 28 institutions in the District was included as well as a study of legislation dealing with children. An investigation of child welfare work in Colorado was made by William H. Slingerland of the Department and published by a local committee. The book contains drafts of a Welfare and Supervision Bill for Children and a General Child Welfare Bill. The Department has continued its regular work of consultation with reference to organization, administration, and policies of institutions dealing with dependent, delinquent, and defective children and legislation in their behalf. The Department will soon undertake an intensive study of the organization and administration of institutions for juvenile delinquents with an analysis and comparative criticism of their work.

Two books were published by the Department of Education in 1920. *An Index Number for State School Systems*, by Leonard P. Ayres, offers a new educational measurement, worked out from official data, showing for each State the number of children attending school, the amount of training they secure, their progress, the amounts expended for buildings and supplies, the salaries paid teachers and other items. This index number which shows the general standing or efficiency of the school system was computed for each one of the 48 states at 10 year periods from 1890 to 1918. The book aroused considerable discussion and has served to greater interest in, and larger appropriations for education.

Trends of School Costs, by W. Randolph Burgess, is a reference book on school costs with data by which it is possible each year to compare the levels of teachers' salaries with the cost of living, and the wages of other workers, and to secure exact figures on tendencies in the cost of school buildings.

Scales by the Department of Education for measurement of spelling and writing ability have been followed by the Picture Supplement Scale to measure ability in silent reading.

In the Department of Statistics, which has worked in close cooperation with the Department of Education, an investigation of wage and price trends from 1820 to the present year has been conducted by Ralph G. Hurlin. A statistical study of the standard of living in this country during the past 50 years is in process. Other studies include salaries paid to college teachers

and expenditures by states for public health.

The chief work of the Department of Industrial Studies has been to carry forward a series of investigations which aims to present an accurate and impartial record of typical experiments in the United States in securing for workers a share in determining conditions of employment.

The Department of Recreation has worked in cooperation with the National Community Centre Association, the Recreation Committee of New York City, the Boy Scouts, Girl Scouts, Camp Fire Girls, National University Extension Association, and the New York Drama League to carry out its purpose which is that of aiding in constructive social organization of leisure time. Assistance in promoting better motion pictures, both for commercial purposes and for school, club, and army and navy service, has been continued.

Studies by the Department include State laws and city ordinances affecting public recreation, child welfare legislation in New York State and types of recreation administration in different cities. The Department has published *The Centre Gazette—1919-1920*, a pamphlet to acquaint superintendents of schools, school boards, and school principals with the developments in school centre activities and to aid in extending and standardizing the use of school buildings for community purposes other than regular school work. Other current publications are: *Sources of Information on Play and Recreation*, *Motion Pictures for Schools, Churches, Clubs, and Community Centres*; *Making Municipal Funds Go Further*, and *Contributions to Community Centre Progress*.

The Department of Remedial Loans has carried on its usual legislative work particularly in connection with the Uniform Small Loan Bill, which was considered, either for enactment or amendment, in Kentucky, Massachusetts, Georgia, Virginia, and New York. The Department is conducting an investigation of coöperative and non-coöperative organizations connected usually with industrial concerns to promote thrift or provide a means for securing provident loans.

The Department of Surveys and Exhibits has continued its work of studying and developing the social survey and exhibit as a factor in community improvement. It has conducted an advisory service, making plans for and assisting in local surveys and exhibits and has carried on studies and experiments in methods and technique. Recent publications are: *Traveling Publicity Campaigns*, by Mary S. Routzahn, a book describing various recent efforts to spread information on social questions through the media of railroad cars and trains, trolley cars, automobile and motor trucks. It gives accounts, with illustrations of 75 such tours, with a discussion of factors entering into the success of an educational tour; *Social Conditions in an American City*, a summary of the findings of the survey of Springfield, Ill., by Shelby M. Harrison; *The Health Show Comes to Town*, by E. G. Routzahn, the story of Dr. W. W. Peter's educational health campaign in China, and *Elements of a Social Publicity Programme* a paper by E. G. Routzahn before the National Conference of Social Work in New Orleans.

Studies in process or ready for publication include, "Public Employment," "Social Welfare and Educational Publicity," "Arts and Crafts

of the Homelands," by Allen Eaton; the *Social Survey Handbook*, and the "Survey Bibliography and Source Book."

Advisory work by the Department has been given in many states, in Canada, China, India, Japan, Cuba, Russia, Sweden, Turkey, Serbia, Uruguay, and Argentina.

The Foundation has in press a volume by the late John C. Campbell, formerly director of the Southern Highland Division, entitled *The Southern Highlander and His Homeland*. It represents the experience of one who spent 25 years in the service of the mountain people in the South.

A free public library containing about 20,000 books and 56,000 pamphlets on social problems, is maintained by the Foundation. Recent bibliographical bulletins published by the Library are: *Thrift and Savings, Industrial Relations, Industrial Hygiene, Family Budgets, Industrial Pensions, Southern Highlands and Books on Social Subjects*, published in 1919. There is also in press a volume on *Social Workers' Guide to the Serial Publications of Representative Social Agencies*, listing approximately 4000 institutions, arranged by subject and title. Librarian and Director of Publications, Frederick W. Jenkins.

The trustees of the Foundation are: Robert W. de Forest, President; Mrs. William B. Rice, Vice-President; Charles D. Norton, John H. Finley, Louisa Lee Schuyler, Mrs. Finley J. Shepard, Alfred T. White, and John M. Glenn, who is also General Director of the Foundation.

Headquarters are at 130 East 22nd St., New York City.

RUSSIA. A republic officially entitled the Russian Federative Republic, stretching over a vast area in eastern Europe and Northern Asia; its boundaries at the close of the year were still unsettled being in dispute with the various states that had separated from old Russia. These states, formerly comprised within the Russian Empire, had formed the following independent republics, some of which were still struggling for existence at the close of the year: Finland, Esthonia, Latvia, Lithuania, Poland, Georgia, Azernaijan, Armenia i.e., the Armenian Republic of Erivan, and Ukraine. (See the above titles, and see also below under *History*). Owing to the confused conditions and the difficulty of distinguishing between fact and propaganda, exact information as to Russian population, production and commerce, etc., in 1920 was not available and the description given below is a summary of pre-war data which will be found in detail in preceding **YEAR BOOKS**.

AREA AND POPULATION. The area of the old Empire after the treaty of Portsmouth was 8,417,118 square miles; and the population in 1915 was given at 182,182,600. Official figures given out by the Soviet government in 1919 indicated that the population under the control of the Soviets in that year numbered about 86,000,000. The figures of the Central Statistical Committee for 1915, omitting Poland and Finland, gave the area and population as follows:

	Area Squ. Mi.	Population
European Russia.....	1,867,737	131,796,800
Caucasus	181,173	13,229,100
Siberia	4,831,882	10,377,900
Central Asia	1,366,832	11,254,100

The same source gave the ethnical division of these regions, omitting Poland, as follows:

Aryans	92,209,909
Jews	3,803,011
Uralo-Altayans	17,656,108
Georgians	1,352,496
Other Caucasians	1,091,756
Chinese, Japanese, and Koreans.....	86,113
Hyperboreans	33,602
All others	4,773

Immigration to the United States from Russia reached its highest point in 1913, when it stood 291,040 but fell to 78,242 in 1916 and in succeeding years was as follows: 1917, 12,716; 1918, 4252; 1919, 1403; 1920, 2378. The total immigration from Russia to the United States from 1820 to the beginning of 1920, was 3,311,406. In 1915 Petrograd had a population of 2,318,645 and Moscow, 1,817,100. Reports after the revolution indicated a great decrease in the population of both, especially of Petrograd. In 1919 the population of Moscow was given at about 1,121,000.

RELIGION. After the Bolshevik revolution in 1917 the state church was disestablished, and its territory appropriated by the government, and freedom of religion was declared. The state church was the so-called orthodox or Græco-Russian faith, with an independent synod, but in relations with the four patriarchs of Jerusalem, Alexandria, Antioch, and Constantinople. The census of 1897 gave the adherents of the Orthodox church at 87,123,604.

EDUCATION. By decree of Dec. 28, 1917, the Soviet government secularized all educational institutions. Elementary education is ill provided for, for although the Soviet government established an extensive school system, education suffered from the lack of trained teachers, and from the accounts of observers in 1920, reported conditions were still chaotic. There are universities at Petrograd, Moscow, Kiev, Kharkov, Kazan, Odessa, Dorpat, Saratov, Tomsk, and in 1917 a new one was established at Perm. A woman's university was established at Petrograd in 1916; and later, universities were established at Voronesh and Yalta, and a school of technology at Ivanov-Vosnesjensk. In 1913 the figures indicated that out of every 100 persons of the age of nine, only 27 were able to read and write. Figures of 1919 gave the number of scholars exclusive of Finland as 8,038,109 or 49.9 per 1000 inhabitants.

PRODUCTION. The country is almost exclusively agricultural, but the chief cereal crops are grown successfully only in the southern sections and to some extent in Siberia. The chief products, have been grain, eggs, butter, timber, mineral oils, flax, and hemp. Figures indicating the decline of the cultivated area comprised within Soviet Russia were published as follows: Cereals (1915) 231,574,000 acres; (1918) 62,890,412 acres; potatoes (1917) 7,514,000 acres. In 1918 cereals harvested in millions of pounds were as follows: Rye, 640; wheat, 71; pulse, 64; buckwheat, 23; potatoes, 515; oats, 336; barley, 46. In 1915 the annual yield of tobacco in tons was given at 122,000. See **AGRICULTURE**. The forest area is enormous and the state owns 950,500,000 acres. There are resources of coal, iron, gold, asbestos and other minerals. It is estimated that 90 per cent of the world's platinum is produced in the Ural region. A

report by French specialists on the subject of the coal situation in Russia in 1920 presented the following points: Between 1916 and 1920 there was a falling off of 687,565,000 pounds or 77 per cent and the extraction in 1920 was about 10 per cent less than that of 1919. This involved also a very heavy falling off in the average individual production. The condition of the mines was not so bad as might have been supposed. The machinery seemed to be intact and although some pits had been flooded the Moscow government had succeeded in draining them. In short, the Soviet government while keeping the instruments of production, seemed unable to overcome the difficulties caused by shortage of labor and of technical skill. See INTERNATIONAL COÖPERATIVE ALLIANCE.

COMMERCE. In 1917 the trade of the United States with Russia totalled \$438,323,202. In the calendar year, 1920, the imports from the United States into Russia in Europe were valued at \$15,446,832, and the exports to the United States from Russia in Europe, \$13,280,886; and the exports from Russia in Asia to the United States \$10,655,196. The figures for the calendar year 1919 were as follows: Exports from Russia in Europe to the United States \$30,259,745; imports to Russia in Europe from the United States \$2,953,480; imports from the United States to Russia in Asia, \$52,176,440; exports from Russia in Asia to the United States \$10,655,196. The trade with Great Britain was as follows for 1918 and 1919 in thousands of pounds sterling:

	1918	1919
Imports from Russia into U. Kingdom.	6,711	16,678
Exports to Russia from U. Kingdom...	298	12,764

According to estimates of the National City Bank of New York City the exports from Russia to Great Britain in 1920 amounted to £34,000,000.

Figures for the total trade were not available for a later period than those given in the preceding YEAR BOOK, but for convenience, the following table may be repeated showing exports and imports from 1913 to 1916:

Year	Imports Roubles	Exports Roubles
1913.....	707,627,000	782,869,000
1914.....	565,466,000	492,386,000
1915.....	586,360,000	206,945,000
1916.....	550,000,000	201,000,000

A writer for an official organ of the government toward the close of the year criticized the policy pursued in regard to foreign trade especially for the lack of a well-conceived plan of operation. When the frontiers were at length partially opened to trade, he said, the foreign trade department of the government was wholly unprepared. He instanced as showing the lack of efficient provision for real needs, the importation of large quantities of children's toy shovels at a time when Russia was suffering for the lack of technical equipment, etc., and he concluding that under existing conditions and in view of the scarcity in all fields of industrial and personal consumption, it would be necessary even to export what Russia needed for its own consumption, merely in order to buy in exchange that which was needed more.

FINANCE. The budget estimate of 1919 was as follows: Revenue 48,000,000,000 rubles; expenditure 230,000,000,000 rubles. The cost of the war according to Russian estimates published at the beginning of 1920 was 50,599,275,699 rubles. French authorities made the following report in 1920 in regard to the Russian debt: At the time when the regular government at Moscow had disappeared the Russian debt exceeded 44,000,000,000 rubles or 117,000,000,000 francs of which 11,520,000,000 rubles (30,640,000,000 francs) was foreign debt and 4,175,000,000 was held by investors who had subscribed for loans before the war. Of the total, France had supplied about 4,300,000,000 of which 1,300,000,000 had been advanced by the state. The French credit in Russia in 1920 accordingly, amounted to about 13,540,000,000 francs, of which about 10,000,000,000 were loaned by private citizens. This situation explained in part why public opinion in France was so disturbed about Bolshevism in Russia.

There was no faith in the intention or the ability of the Soviet government to respect these obligations. In France, however, it was pointed out by certain writers that this was not the debt exclusively of the Soviet government but should be proportionately borne by the states that had formed part of Russia when the debt was incurred, and in certain quarters the French government was criticized for not having made this clear at the time when it recognized the states of Poland, Lithuania, Esthonia, and Latvia.

THE BALTIC PROVINCES. The so-called Baltic Provinces of Esthonia, Livonia and Courland are bounded on the west by the Baltic Sea, on the south by the governments of Kovno, and Vitebsk, on the east by the River Peipus and the governments of Petrograd and Pskov, and on the north by the Gulf of Finland; in 1920 they were all within the limit of the two republics of Esthonia and Latvia. (See articles under these heads). The following information in regard to both was derived from a special report under the United States Bureau of Foreign and Domestic Commerce, Dec. 30, 1920, which supplied from Russian sources diverse material heretofore not accessible in English.

ESTHONIA. In addition to the former Russian government in Esthonia and the northern part of Livonia, Esthonia claimed the islands of Moon Sound and certain districts in the Pskov and Petrograd government. The interests are largely agricultural though to a less extent than those of Latvia as the region is not so rich in soil or in forests and is not so well supplied with communications. In 1919 it was necessary to import grain and a normal crop was not expected in 1920. The principal crops with their product in metric tons in 1919 were: Barley, 104,000; oats, 113,500; potatoes, 550,000; rye, 127,000; wheat, 12,000. Flax, a monopoly of the government, had declined greatly since 1917. Live stock had also been reduced. The figures for 1920 were as follows: Cattle, 404,237; goats, 1,235,932; sheep, 421,103; pigs, 245,991; and horses, 164,601. In 1920 there was reported a dearth in every kind of vegetable with the exception of potatoes. Manufacturing establishments were suffering for lack of fuel and skilled workmen. The budget for 1920 was as follows: Ordinary expenses, 979,450,000 marks; total income 1,071,500,000 marks. Figures for extraordinary expenditures were unavailable.

The chief sources of revenue were the tax on matches, cigarettes, tobacco, and yeast; monopoly of spirits and alcohol; railroads and postal service. The military expenditures in 1919 were by far the heaviest, war expenditures amounting to over five-sevenths of the total. The country had been obliged to meet its obligations by constantly issuing paper money. Little aid for the war expenses was secured by means of loans. The deficit in 1919 was 1,500,000,000 marks which rendered the mark practically valueless and a further deficit of between 2,000,000,000 and 2,500,000,000 was indicated by the 1920 budget. Down to 1919, Estonia had received the following foreign loans: From Finland, 20,000,000 Finnish marks, against future delivery of flax, of which the greater portion had been delivered; England, £300,000 in seed and foodstuffs; United States, \$12,500,000 in foodstuffs and raw materials. Transport facilities as reported in 1920 fell far below the requirements of the country. The country is capable of exporting: Wood, flax, potatoes, alcohol, paper, and cloth. The imports needed include: Raw materials, agricultural machinery, fodder and fertilizers.

LATVIA. In addition to the government of Courland and the southern part of the government of Livonia, the Latvian republic claimed three districts of Vitebsk and regions in the governments of Grodno and Pskov and in East Prussia. The basis of economical life is agriculture and forestry, both of which have received the special attention of the government. The largest estates belong almost exclusively to the Baltic nobles, but the estates of southern Livonia were confiscated in the spring of 1919 and placed under the direction of economic committees. The same thing was done in Courland. Many landowners declared their willingness to sell such parts of their estates as could be taken care of by the purchasers during a period of six years. In the districts claimed by Latvia in Vitebsk, the average estates were mostly in the hands of small landowners.

Crops for the main part of the country, that is to say excluding the Vitebsk districts, in 1919, along with the area planted in hectares were as follows: Oats, 189,311; rye, 115,950; barley, 69,851; potatoes, 24,899; flax, 13,123; wheat, 12,525. The following table shows the value of exports and imports according to the countries during the last half of 1919:

Countries	Imports	Exports
	Lettish Roubles	Lettish Roubles
England	2,500,000	27,600,000
France	24,200,000	5,600,000
Netherlands	5,100,000	3,700,000
Belgium .....	.....	2,800,000
Sweden	16,400,000	500,000
Denmark	13,300,000	400,000

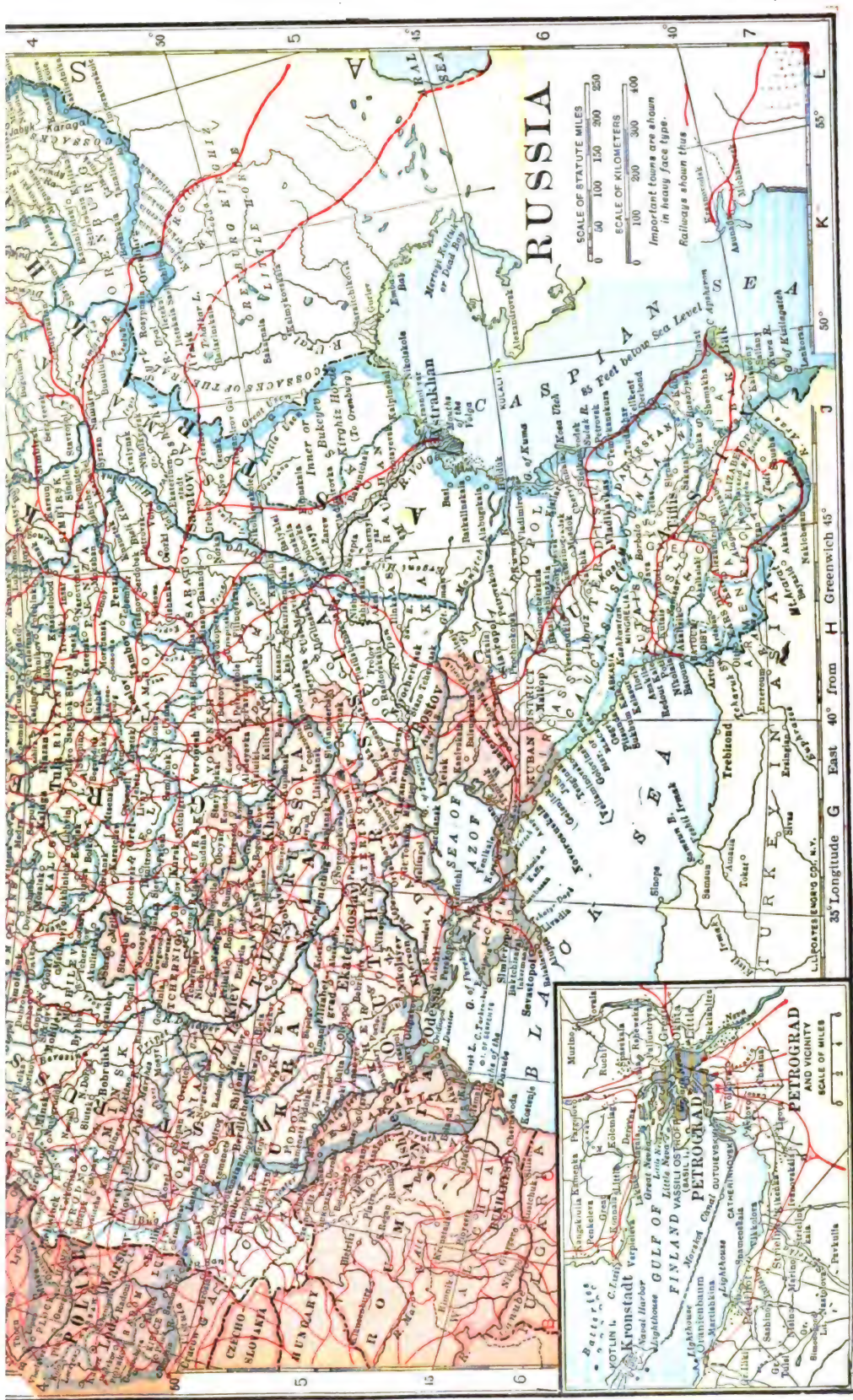
The following financial measures were proposed by the Finance Minister, in 1920: A direct income tax, the rates of which had not been determined; a tax on capital; readjusted taxes on stocks of merchandise, trade, and communication, since the railroads, posts, and telegraphs were yielding practically no revenue; increased inheritance taxes; and a revised system of indirect taxes. Government monopolies were proposed of wines and spirits, matches, and petroleum, and possibly also of tobacco, coffee,

tea, etc. These measures, it was hoped, would provide for the ordinary expenses of the government.

DEFENSE. The Soviet government by decree of Feb. 1, 1918 established the workers' and peasants' army of volunteers which was joined either voluntarily or under compulsion by officers of the old army and which steadily improved in organization and discipline in the course of the conflicts with internal and foreign enemies of the Bolsheviks. By January 31, 1920 when the Russian forces were in control of almost all European Russia and as far east as Lake Baikal in Siberia their field strength was estimated about 600,000 men with a reserve force including administrative services amounted to an additional 700,000. The forces were divided into 13 armies of which 5 were at that time on the eastern front, for the most part in Siberia; 5 on the southern front; and 3 on the northern and western fronts. Forces of about 60,000, chiefly composed of Austrian war prisoners, were distributed in the Near East, along the Prussian frontier, and in the neighborhood of Bokhara and Taskhurd. During the revolution the Baltic fleet fell into the hands of the Bolsheviks. A part of the Black Sea fleet offered resistance to the Bolshevik government on account of the dissatisfaction with the terms of the treaty of Brest-Litovsk and some smaller vessels and one battleship were lost. In June, 1918 the vessels returned to Sebastopol. The Baltic fleet was attacked in August, 1919 by officers of the British fleet and a number of smaller vessels and 2 battleships were destroyed. No figures showing the exact strength of the fleet were available and the details pertaining to the period before the revolution will be found in preceding YEAR BOOKS.

GOVERNMENT The Russian republic is a Federal, Socialist community government under the constitution published July 19, 1918, which was adopted by the fifth All-Russian Soviet Congress. The main features in the constitution are as follows: All central and local authority vested in Soviets of workers, soldiers, and peasant delegates; all private property abolished and become the common possession of the people; state ownership of mines, factories and all other means of production and transport; universal obligation to labor; freedom of conscience, opinion, the press, and meeting; compulsory and universal military service, with the reservation that the defense of the revolution by arms is incumbent only upon the laboring classes. In respect to powers whether executive or judicial the centre and source is the All-Russian Congress of Soviets, consisting of representatives from the town Soviets on the basis of one delegate for 25,000 electors and from provisional congresses of Soviets on the basis of one delegate for 125,000 inhabitants. This congress elects an All-Russian Central Executive Committee of not more than 200 members which serves as the supreme executive, legislative, and administrative body and which constitutes the so-called "Council of People's Commissioners," consisting of 18 members, for departments of foreign affairs, war, navy, interior, justice, labor, social relief, finance, etc. The three chief commissioners in 1919 and 1920 were: President of the Council, M. Lenin (Vladimir Ilitch Ulianov-Lenin); Military Affairs and Navy, M. Leo Trotsky; Foreign Affairs, M. Tchitcherin.





HISTORY

FAILURE OF ANTI-BOLSHEVIST CAMPAIGNS. The downfall of the Anti-Bolshevik leaders in Russia who figured in 1919, was indicated in the preceding YEAR BOOK, though it was not at that time complete. Early in the year the overthrow of Admiral Kolchak (q.v.), who had been defeated in the preceding year was completed and he was executed, February 7. The rout of Gen. Denikin, which began before the end of 1919, was completed early in 1920. By the beginning of the year, the Bolsheviks had captured the city of Ekaterinoslav, and were holding the Donetz coal basin. During the winter months, Denikin's forces were completely demoralized and in the spring, he fled to Constantinople, whence he embarked for England on a British warship, April 8. Semenov, the successor to Kolchak was unable to offer any effective resistance. General Yudenitch in the northwest, had completely failed before the close of 1919, and at the beginning of 1920 the northwestern government which was believed by the British interventionists to be a bulwark against Bolshevism, ceased to be of any importance. On the west there remained the Poles and in the south the forces of General Wrangel, both of which were ready to take the aggressive. In the spring the Polish forces entered the Ukraine and captured the city of Kiev against the advice which had been given to them by the British government. The Soviet forces quickly rallied and drove the Polish army back. For an account of the Soviet invasion of Poland, its failure, and the resulting Treaty, see WAR OF THE NATIONS; see also POLAND. By the first of April 20,000 Czechs had already sailed from Vladivostok. To the west of that city there still remained a considerable number of them and further to the west there were some 2000 Serbians and 2500 Rumanians. Poles to the number of about 2500 left Vladivostok early in April.

JAPAN AND SIBERIA. After the failure of Admiral Kolchak, Japan, declaring that she was defending her interests in the Far East and protecting Korea and her own country from Bolshevism, sent more troops into Siberia, who by January 8, had penetrated as far as Lake Baikal, where they were stationed. After the American forces withdrew, a Japanese contingent seized Vladivostok (April 5). Meanwhile, additional forces were landed on the Siberian coast in February and March. While taking this action, Japanese government officials declared that the troops in Siberia were merely for the defense of Korea and Manchuria, and that Japan had no design of holding the occupied territory, or any other motive than the preservation of peace and order. By midsummer, it was reported that Japan had a force of about 100,000 men in Eastern Siberia.

ALLEGED DECLINE OF BOLSHEVIST POWER. From about the middle of the year there were constantly recurring reports of the approaching fall of the Soviet government in Russia. Similar reports, to be sure, had appeared at short intervals in the anti-Bolshevik press from the very moment of the accession of the Bolsheviks to power and it was found that in almost every case these predictions of disaster were simply due to the natural desire that these disasters should occur. In 1920, however, the reports became more circumstantial and what was more important, rested on the authority of apparently

impartial witnesses. It appeared that a large number of the officials had fled into Germany; also that a considerable amount of wealth had been invested by prominent Bolsheviks in foreign countries. Moreover the appeals to the workingmen of other countries to come to the aid of Russia were becoming more emphatic and assuming a tone of supplication. There were reports of a mutiny of marines at Petrograd, of a revolt of the peasants, of demonstrations among the Red troops on behalf of an immediate peace at any price. These things were attributed not only to the defeat of the Red armies on the Polish front and to the advance of General Wrangel in the south, but to the failure of the Bolshevik social experiments and the bankruptcy of the revolution itself. A notable feature of the commentaries on Bolshevism during the year was the change of attitude on the part of well-known and thorough-going Socialists who repeatedly pointed out the failure of the Bolsheviks to realize true Socialist aims. The most generally cited of these criticisms owing to the great attainments and fine character of the critic was the exposé by Mr. Bertrand Russell which he published in the British press after a visit to Russia. (See the article SOCIALISM.) In October the Soviet situation was described in the Allied press as follows: Repulsed on all its frontiers; incapable of organizing new armies or equipping the troops that remained; powerless to impose its authority on the masses of workingmen and peasants who now realized that they had been deceived; powerless also to alleviate the sufferings of the people or to end the civil war or to enter into relations with other Powers; the Soviet government was facing the severest winter that it had ever endured.

THE RECOGNITION OF WRANGEL. The French government recognized the government of General Wrangel, August 11. This course was much applauded in the press and high hopes were expressed of the success of the new aspirant. Ever since the revolution of 1917 every Anti-Bolshevik leader in Russia was hailed by those among the Allies who believed in intervention as the savior of Russia and certain to succeed. Detailed account of successive victories which in each case turned out to be more of the nature of defeats were given in the leading newspapers of France, England, and the United States. When one of the leaders was overthrown and disappeared the same policy in respect to the next was followed in the Allied press until his disappearance. The successive disappearances of Anti-Bolshevik chiefs came therefore somewhat as a surprise to the public at large, until they learned the habit of the newspapers in this particular. In every case the new leader was said to have learned from the faults of his predecessors and it was prophesied that he would overcome the Bolsheviks. After this had gone on during nearly two years without change and always with the same result, that is to say, after welcoming with the greatest of enthusiasm each new leader predicting his inevitable success and witnessing his failure, the same thing began all over again in the case of General Wrangel, the anti-Bolshevik chief of South Russia. In regard to General Wrangel it was said that his leadership differed from that of all his predecessors and that this time at all events success was assured. The following extract illustrates the point of view of the French sup-

porters of an aggressive policy against the Bolsheviks, representing a vast body of French writing on the subject:

"When the Russian patriots were beginning finally to lose faith in an early deliverance from the horrors of anarchy noble France boldly issued a courageous recognition of the government of General Wrangel in South Russia. The happy consequences which will result inevitably from this gesture of noble France are numberless. Carrying the sacred tricolor, General Wrangel and his companions in arms conscious of the powerful support of the French nation and aware that western Europe at least understands their aims and their aspirations, will continue with redoubled energy their obstinate struggle against the tyrants of their tortured nation. The fall of Bolshevism is not far away. The Bolshevik forces have already met with terrible disasters. Their Red army which had been maintained only by a monstrous and tyrannical discipline and by terror is demoralized by the events which caused its flight from Poland and if it does not turn against the Commissaries of the People it will at least be unable to serve any longer for the support of Bolshevism. The Bolsheviks cannot exist without an army. The armies of Wrangel pursue their glorious course. His proclamation to the effect that the peasants would not be disturbed in the possession of the land is winning the support of the country. The recognition by France is encouraging the masses. These three powerful forces will soon deliver Russia and the entire world from the horrors of violence and anarchy."

OVERTHROW OF GENERAL WRANGEL. Early in October General Wrangel's forces attempted an advance against the Soviet troops and attacked the Kakhova bridgehead on the Dnieper river, but it was announced October 17th that they were not only repulsed but were retreating in great disorder. The general in command of the Kuban division was killed and there were heavy losses of men and munitions. At the same time it was reported that General Wrangel had signed a law creating local Zemstvos, which were to send delegates to a new Constituent Assembly.

Throughout October and the early part of November reports of reverses continued. It was learned that the French Government was firm in its determination not to send military assistance to him. On November 10, it was learned that Gen. Wrangel's forces were in full retreat toward their main defense line having abandoned their entire first line of defense before Perekop. At the same time it was reported that the Russian forces had captured two regiments of cavalry. It was announced on November 14 that the army of General Wrangel had been destroyed and many prisoners taken, and that a number of his generals had committed suicide. The battle occurred in the neighborhood of Perekop. Twenty divisions of the Reds were said to have been concentrated here against three divisions of the White army and in spite of the obstinate resistance of the latter it was cut to pieces. The Bolsheviks claimed to have taken 40,000 prisoners and admitted the loss of 30,000 men. It was reported in the press at the same time, that General Wrangel had left Russia on board a French battleship in Sebastopol.

The Soviet forces entered Sebastopol on November 13. The fate of these refugees who were said to number about 40,000, caused much anxiety to the relief officials, especially to the American relief workers upon whom the majority depended. Large numbers of them were received on board the Allied warships in the harbor, but many were left behind. According to the supporters of General Wrangel, there were five Red armies concentrated against him, numbering more than 100,000 men.

The disaster was attributed to the same causes that had ruined Kolchak, Denikin, and Yudenich, as had ruined Kolchak, Denikin, and Yudenich,

namely, corruption, incompetency, and jealousy among the officials, and reaction. When he occupied the Faurida province, he was overwhelmed by a vast number of supporters of the old regime and while the soldiers went unclothed and lacked munitions there were many signs of wealth among civilians in the rear. The attempt of the Czarists to make use of Wrangel damaged his cause. As a result of these attempts the rumor was circulated that the Grand Duke Michael would be chosen Czar. The immediate cause of his defeat, however, was the Riga armistice between the Poles and Russians which set free the Soviet troops in the Crimea.

The French press whose sanguine expectations in respect to General Wrangel, have been quoted above, commented on the disaster without much reference to what had been said before. They declared that the disaster was inevitable; that General Wrangel lacked munitions and supplies; that the allies of France had failed in their duty and ought to have come to his aid against the Red terror; that France alone had been disposed to aid him as she aided Pilsudski, but her resources did not admit of supplying the necessary means. If the indifference of her allies should result in another war in the spring, France, at least, would not be responsible. Such a renewal of the war against Poland was in the opinion of French writers who supported the policy of their government, highly probable. The Paris Temps published the following comments:

"If the Bolshevik regime does not fall this winter at Moscow, war will begin again at an early date and in view of this, it is the duty of the Polish people to prepare themselves deliberately for all the events of tomorrow, just as it is the duty of the Allies to give effective aid to Poland, who is the last rampart of central and western Europe against the monstrous Red wave of Russian anarchy."

BOLSHEVIST GOVERNMENT. The reports of events in Russia throughout the year were at the mercy of two opposing streams of propaganda and it was difficult to disentangle the facts. According to reports the policy of terrorism came to an end in January. On January 21st the death penalty was abolished. About that time it was reported that a certain measure of liberty of the press and of speech had been granted and that the government was doing all that was possible to maintain order; also that elaborate plans for popular education were being carried out, and a liberal programme of social legislation. Other changes announced were the recognition of complete equality before the law for men and women and the removal of obstacles to marriage, such as differences in religious faith, in the new marriage code. The code involved also provision that only civil marriages were legal and that divorces could be obtained on the desire of either one or both of the parties. The labor policy of the government encouraged all persons to join the trades unions which were under direct government control and had certain civic functions, exercised through a labor commissary, including the making of reports on sanitary conditions and the registering of persons out of work. All labor was compulsory and a system of rationing prevailed. The disbanded troops of the army were re-organized into industrial armies and measures were taken toward conscripting the labor of all able-bodied persons between the ages of 16 and 50 for males and 16 and 45 for females. Reports of conditions of distress continued throughout the year. A striking feature of the published descriptions

of the Soviet system in 1920 was the testimony from many persons sympathetic with Socialism and even with the most radical forms of it, all to the effect that the conditions under the Soviet government in Russia were intolerable; but while agreed in this, they differed in respect to the responsibility of the Soviet government for these conditions and in respect to the policy that the other Powers should pursue. Many agreed with the Bolsheviks themselves that the distress was rather the result of the complete collapse of Russia during the war than of Soviet misrule. The Bolsheviks attributed all evils to the Allied policy and especially to the blockade. The subject was one that involved international relations and appeared under different aspects according to the point of view of the ruling classes in the nation whose interests were involved. For further discussion see the article WAR OF THE NATIONS.

RELATIONS WITH THE POWERS. The year began with indications of a complete reversal of policy on the part of the Allies in respect to the blockade. At the Supreme Council in Paris after a long debate, it was decided on January 15, to lift the blockade immediately, with a view to permitting trade relations with the Russian coöperative societies, but without recognizing the central government. This policy proved of no avail, for the Moscow government refused to accept a resumption of trade with these individual co-operative societies and it was reported soon afterwards, that the Soviet government had assumed direct control of the co-operatives and that from February 1 they were under the direction of commissaries, acting for the Moscow government. Thus, the latter took the stand that trade relations if resumed, must be with the government. In France opinion began to incline toward the renewal of trade relations, but there was a strong feeling against any measure that implied recognition of the Soviet government. The prime minister, M. Millerand, repeated before the Chamber of Deputies, February 6, his previous opinion that trade with Russia did not involve peace with the Bolsheviks. The British prime minister, Lloyd George, made the same point in a speech in the House of Commons, February 10, saying that peace with the Soviet government was impossible until they gave some better proof of being fit to govern Russia in a civilized manner. He contended that the best way to restore the Russian people to sanity was to open trade with them. The Supreme Economic Council, February 24, repeated a decision previously reached, to encourage trade between Russia and other countries, but without recognizing the Russian government. Among the efforts on the part of Russia to secure peace with the other Powers, was a proposal announced February 26th to all the Powers including Japan that the Soviet government should pledge itself to a constituent assembly and that in return the policy of intervention should be given up, peace treaties signed, trade relations resumed and credits advanced. On the following day a note from the American State Department called this proposal merely a matter of propaganda differing in no way from preceding proposals. Efforts to secure peace with France encountered an obstacle in the fear of French creditors that the Bolsheviks would repudiate the debt of 26,000,000,000 francs owed to France by the old Russian gov-

ernment. During the remainder of the year the policy of the Soviet government limited its efforts for the most part to securing the resumption of trade relations, believing that political recognition would follow.

In March a Russian delegation was appointed under M. Gregory Krassin, Soviet minister of trade and commerce and M. Kamenef, to proceed to England, for the discussion of trade relations. The San Remo Conference authorized the Allied representatives to meet this delegation, and meetings were held at the end of May and early in June. On June 3, Lloyd George declared that there could be no resumption of trade until the Soviet government gave guarantees that it would cease attacking British interests, and he demanded further, the release of all British prisoners. Negotiations on these points were carried on in the summer months. Meanwhile, the Soviet government was trying to solve the question of trade by other means, and approaching other governments. A delegation was sent to Copenhagen in April, for example, and agreement for the resumption of trade was made with certain international associations. These were also under the direction of M. Krassin, who endeavored to come to an understanding with the so-called International Committee on the resumption of trade with Russia. In the United States business men formed the American Commercial Association to promote trade with Russia. At a meeting for this purpose in New York City, over 100 representatives of business firms were present.

At the beginning of October the situation of the Soviet government seemed precarious. Not only had it sustained an overwhelming defeat at the hands of Poland, but it had made little progress in its efforts to renew relations with foreign Powers. The governments of France and United States were openly hostile, both of them accusing the Moscow government of lying and deceit. In Great Britain, trade discussions had been carried on with the Russian representatives, Kamenef and Krassin, but upon the charge that the former was inciting a Bolshevik movement in England, he was compelled to leave the country. (See GREAT BRITAIN, *History*.) Discussions with Krassin were resumed after an interval but in the autumn the relations between the two governments were complicated by difficulties over the question of the British prisoners of war. The British government accused the Russians of violating the terms they had accepted in July in respect to prisoners and in respect to propaganda. On October 6, M. Krassin replied that Great Britain had not fulfilled her part of the conditions, but on the other hand had helped the enemies of the Soviets, as for example, in the support of Poland against Russia and the official reception accorded to General Wrangel on a flagship of the British Black Sea fleet and the opportunity allowed to him to purchase through his agents supplies in England and send them to southern Russia. Further notes followed on the subject and charges and counter-charges were made. The British government accused the Soviet government of a campaign of propaganda and conspiracy against the British power in Asia and declared that it would hold the Soviet government strictly to its pledge to cease propaganda against British interests. France also was at odds at this time with the Soviet government

over the question of war prisoners. On August 24 the French prime minister had telegraphed the Russian government that if on September 30 a single Frenchman was held in Russia the French government would order its fleet into southern Russian waters. The French charged the Soviet government with holding 900 French citizens against their will. The British government also protested against the employment of Bolshevik submarines in the Black Sea (October 2). In southern Russia and the Ukraine in the autumn, conditions were reported as highly adverse to the Bolshevik cause. During this period General Wrangel's movement was still at the stage when the Allied press was reporting its successes.

Down to November the question of renewing trade relations with Russia divided the policy of the Allies. In general Great Britain and Italy were in favor of it while France was strongly opposed and the United States officially opposed, although the movement in its favor was gathering strength throughout this country. On November 25, a change in the policy of France was indicated. The French prime minister informed the committee on foreign relations of the Chamber of Deputies, November 24, that he favored the suppression of the blockade. He also said that as the Soviet government was actually in operation it had been decided to permit French traders and manufacturers to engage in business with Russia. It was said at that time also that the government was planning to encourage trade with Russia. In the United States private enterprise had already begun to move in the matter and a Mr. W. D. Vanderlip was the object of much attention in the press as the representative of an extensive American company organized to invest capital in Russia. It was reported that extensive concessions involving a large area of Kamchatka had been made to it and that the work of exploitation was soon to begin on an enormous scale. There was much alarm on the subject in the press on the part of those who did not favor recognition in any form, and a good deal was made of a passage quoted from a speech of Lenin to the effect that this concession was in the interest of the Soviet government, because it was likely to exasperate further the ill-feeling between the Japanese and the American government.

At the close of the year Lloyd George and the Russian envoy agreed upon an arrangement for the resumption of trade relations between Russia and Great Britain. They included besides commercial stipulations a demand that the Soviet government should refrain from propaganda in British India and the Far East directed against the British government. The preamble was as follows:

"Whereas it is desirable in the interest both of Russia and of the United Kingdom that peaceful trade and commerce should be resumed forthwith between these countries, and whereas for this purpose it is necessary pending the conclusion of a formal treaty between the Governments of these countries by which their permanent economic and political relations shall be regulated, that a preliminary agreement should be arrived at between the Government of the United Kingdom and the Russian Soviet Government."

"The aforesaid parties have accordingly entered into the following agreement, without prejudice to the view which either of them may hold as to the legal status of the other, and subject always to the fulfillment of the conditions specified in the British note dated June 30, 1920, and accepted in the telegram from the Russian Soviet Government dated July 7, 1920, with regard to the mutual cessation of hostilities and propaganda di-

rected against the institutions or interests of the other party, and the repatriation of prisoners."

At the close of the year it was understood that the British government was willing to waive the payment of debts incurred by Russia to Great Britain during and before the war.

In Russia proposals were under discussion at the close of the year which indicated a spirit of compromise and an abandonment for the present of attempts to extend communism throughout the state. The peasants whose possession of the land had for a long time been tacitly accepted, were according to this program, to have the right to sell their products, subject to a tax in kind. The coöperative societies were to regain their right to function within the national boundaries. Foreign capital was to be invited to exploit the country's national resources. The moderate element appeared to be getting control of the Communist party, and to realize that the application of its principles was impracticable. Hope of a world revolution had apparently departed, and the policy of foreign propaganda toward that end seemed likely to be abandoned.

RUTGERS COLLEGE. A non-sectarian institution of the higher learning for men and women, at New Brunswick, N. J., founded in 1766. There were 677 men and 133 women enrolled for the regular fall session, and 530 students for the summer session. Including the short courses, extension courses, etc., the student body numbered 1978, excluding duplicates. There were 138 members in the faculty. The income for the year was \$483,000. There were 106,000 volumes in the library. President, W. H. S. Demarest, D.D., LL.D.

RYAN, Sir CHARLES LISTER. Former Comptroller and Auditor-General in the British government, died, November 20. He was born at Worcester, England, Sept. 30, 1831. At the age of 20 he became a clerk in the audit office and was one of the private secretaries of Disraeli and also Gladstone.

RYE. As pointed out by provisional estimates of the International Institute of Agriculture, Rome, the area devoted to rye in the principal rye growing countries of the world in 1920 was under the acreage of 1919, but the production was still above the average for the five years 1914-1918. The 1920 production of rye in Belgium, Bulgaria, Spain, Finland, France, Italy, Netherlands, Sweden, and Switzerland was given as 142,348,000 bushels, or 112.6 per cent of the 1919 crop and 111.8 per cent of the 5-year average 1914-1918. The yield of Prussia was placed at 153,866,000 bushels, or 81.8 per cent of the crop of 1919. The Canadian yield of 1920 was estimated at 12,240,000 bushels, or 2,069,000 above the yield of the preceding year.

The United States, as estimated by the Department of Agriculture, produced 69,318,000 bushels on 5,043,000 acres, or at the rate of 13.7 bushels per acre. The production of 1919 was 88,909,000 bushels on 7,103,000 acres, or at the rate of 12.5 bushels per acre, while the average data for the five years 1914-1918 showed a yield of 59,933,000 bushels on 3,918,000 acres, or at the rate of 15.3 bushels per acre. The average farm value of rye Dec. 1, 1920, was \$1.278 per bushel, making the total value of the crop \$85,609,000 as compared with \$1.345 per bushel and a total value of \$119,595,000 on Dec. 1, 1919. The principal rye producing States are: North Dakota, Michigan, Wisconsin, Minnesota, and

Nebraska, which produced more than half of the total crop of 1919. The area sown to rye in the United States in the fall of 1920 was given at 4,653,000 acres, or 88.6 per cent of the acreage sown the preceding fall.

The exports of rye from the United States in the shipping season 1918-19 amounted to 40,386,000 bushels as against the average of 1,054,000 bushels for the five years ending 1914. In Europe rye culture decreased during the war, while in the United States and Canada it increased in the effort to furnish greater supplies of breadstuffs to the nations allied against the central European powers. Since the close of the war, marked reductions in the rye acreage in these countries have taken place. The international trade in rye has decreased considerably as compared with pre-war years as the greater portion of the exports at that time were from Germany, Hungary, and Russia.

RYKACHEV, M. A. See METEOROLOGY.

SACCARDO, PIER ANDREA. Italian botanist, died, February 12. He was born in 1855. He was for a long time director of the Botanical Garden at Padua, Italy, and at the time of his death was professor emeritus of botany in the Royal University of Padua. He edited *Sylloge Fungorum*.

SACRAMENTO, CAL. See WATER WORKS.

SAFETY AT SEA. During the fiscal year 1919-1920 according to the annual report of the Supervising Inspector-General of the United States Steamboat-Inspection Service, 368,870,327 passengers were carried on steam vessels required to report to the service, of which number 42 were lost, so that there were carried in safety 8,782,626 passengers for each one that perished. The total number of lives lost, that is including both passengers and crew was 470. The total number of accidents resulting in loss of life during the year was 192, or a decrease of two from the previous year. The more notable disasters to American shipping resulting in an unusual loss of life during the fiscal year July 1, 1919, to June 30, 1920, as recorded by the United States Steamboat-Inspection Service were as follows:

Sept. 9, 1919, at 11 A.M., en route from Antilla, Cuba, to New York, N. Y., the steamer *Corydon* sank during a hurricane in the Bahamas Channel, resulting in the loss of 27 lives.

Oct. 28, 1919, about 4.20 A.M., the steamer *Muskegon* struck the south pier at the entrance to Muskegon Harbor, during a gale and heavy sea, resulting in the total loss of vessel and the loss of 23 lives.

Nov. 9, 1919, steamer *Polar Land* sank in latitude 44° 25' N., longitude 57° 50' W., with all on board. The vessel carried a crew of 51.

About Nov. 11, 1919, steamer *John Owen* foundered while en route from Duluth, Minn., to Midland, Ontario, loaded with 100,000 bushels of grain. The entire crew, consisting of 22 persons, was lost.

Nov. 22, 1919, steamer *Myron*, while bound from Munising to Bay City, Mich., with the barge *Miztec* in tow, both laden with lumber, foundered when about 6 miles west of Whitefish Point, Lake Superior. Sixteen lives were lost in this accident.

Dec. 18, 1919, steamer *J. A. Chanslor* struck the rocks near Cape Blanco, Oreg., and was wrecked with a loss of 38 lives, the vessel becoming a total loss. The *J. A. Chanslor* was voyaging from Portland, Oreg., to San Francisco,

Cal., when she struck the rocks, broke in two, and sank.

Jan. 26, 1920, steamer *Mielero*, from Mantanzas, Cuba, to Philadelphia, Pa., in approximately latitude 31° 45' N. and longitude 78° 41' W., at 7 A. M., broke in half and sank within a half hour, after ending going first, and forward end following within a few minutes. The master, the master's wife, two children, and 18 others, officers and crew, lost their lives.

Jan. 29, 1920, steamer *Fortune* sailed from Newport News, Va., for a southern port, and was lost off Jekyll Island with all hands. The crew consisted of 13 men and no trace of the vessel was found.

Feb. 6, 1920, steamer *Polias*, Searsport, Me., to Norfolk, Va., in ballast. Struck Old Cillely Ledge during a snowstorm. The third mate and 10 others of the crew left the ship against the master's orders and were lost. On February 7 the rest of the crew left the vessel in the ship's boats and were towed to the cutter *Acushnet*.

March 14, 1920, towing steamer *Georges Creek*, with three barges en route from Norfolk, Va., to Boston, Mass., encountered heavy weather in Block Island Sound, and two of the barges were lost and five lives were destroyed.

April 18, 1920, steamer *Baltic* received an SOS message to the effect that the hatches of steamer *William O'Brien* were opened by the severe storm and the vessel was sinking in latitude of 39° 50' N., longitude 65° 50' W. A search was made and the remains of deck houses, cushions, and other small articles were found. Vessel carried a crew of 40, and all were lost. The *William O'Brien* sailed from New York, N. Y., for Rotterdam, Holland, April 15, 1920, with a cargo of coal.

The concrete ship *Cape Fear*, built during the war by the United States Shipping Board at Wilmington, N. C., was sunk on the night of October 29, in Narragansett Bay in a head-on collision with the Savannah Line steamer *City of Atlanta*. The *Cape Fear* was bound south out of Providence in ballast and the *City of Atlanta* north for Providence with a cargo of pig iron.

The concrete ship remained above water only a few minutes, but 23 of the 34 men of the crew of the sunken vessel were rescued.

The *Cape Fear* was 282 feet long overall, 46 feet beam, 28 feet depth, having a full cargo displacement of 6175 tons, a deadweight of 3257 tons.

DISASTERS ON THE GREAT LAKES. During 1920 there were eight vessel losses and 29 lives lost, in shipping disasters on the Great Lakes, against 19 vessel losses and 80 lives lost the preceding year. The 29 fatalities were the result of a collision on the night of August 20, when the steamer *Superior City* sank in Lake Superior off Whitefish Point, after a collision in a fog with the steamer *Willis L. King*.

The *Superior City* sank so quickly after the collision it was impossible to launch boats, according to the stories of the four survivors. One of those lost was a woman, wife of the second engineer.

Other Great Lakes vessels lost in 1920 were:

The *Mary A. McGregor*, fire; the *J. H. Shrigley*, abandoned; the *Marion*, fire; the *Sarmon*, sprang leak; the *Mary Woolson*, waterlogged; the *Miztec*, abandoned; the *Francis J. Widlar*, driven on rocks. The *Widlar* was driven on the rocks near Whitefish Point during a storm that swept the upper lakes in November. The rescue

of the crew was made after a most thrilling effort by Capt. Arthur Forbes, of Ashtabula, Ohio, in command of the *Widlar*, who set out in a small boat with a few men for the channel to bring help. The party reached the channel after battling the waves for about 10 miles, and rescue ships went to the wreck and saved all members of the crew. The *Widlar* was abandoned by her owners to the underwriters.

ST. CHRISTOPHER. See **ST. KITTS AND NEVIS**.

ST. HELENA. An island of volcanic origin in the South Atlantic, 1200 miles from the western coast of Africa; belonging to Great Britain. Area, 47,000 square miles; population (1911), 3520; estimated civil population (Jan. 1, 1919), 3654. Capital, Jamestown.

ST. JOHN'S COLLEGE. An institution of the higher learning at Annapolis, Md., founded in 1696. For the regular fall session of 1920 there were 178 students enrolled. The members of the faculty numbered 17. The library contained 15,000 volumes. The endowment funds amounted to \$20,000 and the income for the year was \$57,306. The college has been rated among the 10 "distinguished" colleges of the country by the War Department. President, Thomas Fell, Ph.D., LL.D., D.C.L.

ST. KITTS AND NEVIS. An administrative division of the Leeward Islands (q.v.), governed along with the island of Anguilla under a British administrator with an executive and a legislative council. Area of St. Kitts, 65 square miles; pop. (1911) 28,283; Nevis, 50 square miles, with a pop. of 4075. Chief town of St. Kitts, Basseterre (pop., 8159); of Nevis, Charlestown (1912). Administrator at the beginning of 1919, Major J. A. Burdon.

ST. LOUIS, MO. See **CITY PLANNING; GARBAGE**.

ST. LOUIS UNIVERSITY. A Roman Catholic institution of the higher learning at St. Louis, Mo., founded in 1829. There were 470 students enrolled for the summer session, and 1801 for the regular fall term. The faculty numbered 218. A campaign for \$3,000,000 was conducted as an endowment fund. Many substantial gifts were received, and over \$800,000 had been subscribed. There were 85,000 volumes in the library. The Knights of Columbus of Missouri pledged \$250,000 to the endowment campaign, and the two next highest gifts were anonymous. Mr. Edward R. Stettinius of New York gave \$50,000. President, V. Rev. William F. Robison, S.J.

ST. LUCIA. One of the Windward Islands in the West Indies; a British colony. Area, 233 square miles; population (1911) 487,637; estimated (1919) 54,989. Capital, Castries, a coaling station and naval base. The white inhabitants are for the most part French Creoles whose religion is Roman Catholic. The chief products are: Sugar, cocoa, lime juice, honey, molasses, lime oil, bay oil, hides, logwood, and fuel. Administrator and colonial secretary in 1920, Lieutenant-Colonel W. B. Davidson-Houston.

ST. PAUL, MINN. See **CITY PLANNING**.

SAINT PIERRE AND MIQUELON. The principal islands of two groups off the south coast of Newfoundland, belonging to France. Area of the groups 93 square miles of which 83 were in the Miquelon group; total population, 4652 (4209 in the Saint Pierre group). Chief town, Saint Pierre.

SAINT THOMAS. See **SAO THOMÉ AND PRINCIPE**.

SAINT VINCENT. One of the Windward Islands in the West Indies; a colony of Great Britain. Area, about 150 miles; population in 1911, 41,877; estimated in 1920, 53,210. Capital, Kingstown, with a population of 4300. One-half of the Grenadines are included under its administration, the other half being under that of Grenada. Its chief exports are arrowroot, cotton, cocoa, live stock, fruit, and vegetables, and its fisheries are abundant. Administrator and colonial secretary in 1920, R. Popham Lobb.

SAKHALIN. An island off the east coast of Siberia separated from Japan by the narrow Strait of Soya; of which the part south of the 50th parallel of north latitude belongs to Japan and is called Karafuto and the part north of that line belongs to Russia and constitutes the province of Sakhalin. Japanese Sakhalin has an area of about 13,148 square miles, with a population in 1918 of 79,131. See **KARAFUTO**. The area of the Russian province is 14,668 square miles with a population estimated Jan. 1, 1915 at 34,000.

SALMON. See **ALASKA**.

SALT LAKE CITY, UTAH. See **GARBAGE**.

SALVADOR. A Central American republic on the Pacific Coast to the east of Guatemala. Capital, San Salvador.

AREA AND POPULATION. The area is estimated at 8170 square miles, but estimates vary, and the population was estimated, Jan. 1, 1919, at 1,298,621, of whom about two-thirds were mestizos and about one-sixth Indians. The population of the larger cities was estimated as follows: San Salvador, 65,667; Santa Ana, 59,713; San Miguel, 29,835. The capital, badly damaged by the earthquakes of 1917 and 1919, was recovering from the effects. In 1918 the births numbered 49,783, and the deaths, 33,884.

PRODUCTION. The following information in regard to production and commerce was supplied by the United States Bureau of Foreign and Domestic Commerce in 1920: The principal crop is coffee, grown on the plateaus and mountain sides. The lower sections of the country produce sugar and other tropical products, such as cacao, indigo, rubber, sisal, balsam, rice, corn, and medicinal plants. In the natural forests of the country are found dyewoods and such hardwoods as mahogany, rosewood, cedar, and walnut. Mangrove grows in swampy places and along river banks. Hardwoods grow in the uplands of the interior, but only in small areas, for most of the land has been cleared for agriculture, and the forest resources are steadily becoming more limited because of the density of the population. Large areas of balsam trees are found in part of the coast lands. The so-called Peruvian balsam which is one of the chief exports of Salvador is not, as its name implies, a native of Peru. This balsam is the hardened sap of the balsam trees. It is gathered by natives and sold to local dealers who heat it and pour it, a grayish red mass, into rectangular tins containing about 25 kilos each, in form for exportation. The balsam is known for its antiseptic qualities and is in demand as an ingredient in medical preparations. Salvador is rich in minerals, having deposits of gold, silver, copper, iron, lead, zinc, and antimony. The output of gold constitutes one of the principal ex-

ports. Petroleum deposits have been found, the discovery in most cases having been accidental, occurring when artesian wells were drilled.

According to the latest information available in 1920, about 215,000 acres were planted in coffee trees. Early estimates of the 1919-20 crop placed the harvest at 40,000 to 50,000 tons, a record crop. The districts of Santa Tecla and Sonsonate and the other provinces where the coffee trees were destroyed by the ashes from the volcano during the great earthquake of 1917 appeared to have derived fresh vigor from the ashes. Sugar is raised around Sonsonate and to some extent on the uplands. The 1919 sugar crop was an abundant one. Salvador is developing industrially and besides supplying many articles needed for domestic consumption it is beginning to export certain manufactured products to neighboring Latin American countries. The output of local mills embraces cotton and silk fabrics, shawls, scarfs and handkerchiefs, leather goods, such as harness, saddles, and shoes, fibre goods, including rope, hammocks, native woven straw hats, and baskets, simply made furniture and musical instruments, cigars and cigarettes, sugar, candy, rum, beer, and lumber. Electric power for industrial plants is obtained from the rivers of Salvador. Stock raising is an important industry, though the grazing land of the country is necessarily limited by the dense population. Ranchers have been giving more attention to improved breeds.

COMMERCE. The following tables show the values of imports and exports by countries in the four-year period, 1915 to 1918, inclusive.

Cotton goods have been the largest import and coffee has made up about four-fifths of the exports.

RAILWAYS. Railways open to traffic in 1918 had a length of 213 miles, all narrow gauge. During 1920 it was announced that the construction of a railway connecting central Guatemala with Salvador, which was postponed during the World War, would be undertaken again. This line will connect with the railway within which runs from Barrios, on the Atlantic, to San Jose, on the Pacific, and in this way would give Salvador direct rail communication with an Atlantic port. The new line was estimated to be 157 miles long and would cost between \$7,000,000 and \$8,000,000. Some three years would be required for its construction.

SHIPPING. In 1917 the vessels entered and cleared numbered 355 with a tonnage of 520,759. In that year 72 per cent of the foreign trade of Salvador in 1917 was carried in vessels flying the American flag, 255 of the 354 ships entering Salvadorean ports in that year having sailed from the United States; 20 ships were under the British flag; 18 were Norwegian; 13 Salvadorean; 5 Cuban; 5 Honduran and 1 Nicaraguan. The number of passengers entering was 1605 and the number leaving was 1766. Two-thirds of the passenger traffic was at the port of Acajutla.

FINANCE. In 1919 the total value of government revenues was 13,432,337 colones, and the expenditures were 13,704,263 colones. The budget for 1919-20, according to a British authority was: Revenues £1,670,056; expenditures, £1,692,692; the foreign debt according to a message of the President, was on Dec. 31, 1919, 12,292,576 colones, and the domestic debt, 12,203,240 colones.

The representatives of Salvador participating in the movement for the unity of the five Central American states attended the meeting at Antigua, Guatemala, November 1. The Salvador-

		IMPORTS			
Countries of Origin		1915	1916	1917	1918
United States		\$2,474,280	\$3,586,507	\$4,260,371	\$3,455,393
United Kingdom		966,938	1,338,700	1,680,349	1,560,348
France		181,983	316,186	310,150	145,738
Italy		113,973	166,423	145,690	56,180
Spain		69,168	148,184	140,805	20,924
Japan		56,038	113,685	211,830	204,149
China		24,216	26,546	82,526	19,932
Denmark		16,989	11,281	2,358	2,737
Sweden		21,316	41,834	38,085	31,426
Netherlands		58,544	36,495	1,111	1,676
Germany		40,088	934	83	289
Chile					445,348
Panama		6,671	11,753	19,420	108,597
Mexico		9,744	4,955	1,652	22,453
All other countries		32,269	20,186	24,846	59,508
Total		\$4,022,167	\$5,823,619	\$6,869,276	\$6,142,698
		EXPORTS			
Countries of Destination		1915	1916	1917	1918
United States		\$ 3,715,551	\$ 4,102,410	\$ 6,427,376	\$10,547,050
United Kingdom		415,747	67,253	172,600	100,920
France		1,098,312	2,779,179	2,235,160	53,315
Italy		927,921	1,175,421	998,600	19,690
Spain		51,882	90,428	48,420	361,590
Denmark		609,162	162,660	11,950	9,520
Norway		1,542,787	1,420,184	318,375	61,945
Sweden		854,680	1,217,951		
Netherlands		1,127,048	210,312	32,250	
Germany		11,934	38,520		
Mexico		9,797		68,625	630,290
Chile		44,764	128,158	90,350	352,600
Peru		600	43,452	132,325	92,500
Ecuador		3,080	10,500	17,150	13,440
Panama		67,189	103,220	95,475	29,665
Costa Rica		20,688	18,478	15,260	18,220
Guatemala		2,181	5,146	11,800	73,720
Honduras		7,289	27,268	6,125	
Nicaragua		1,860	9,211	18,425	40,335
All other countries		51,253			
Total		\$10,563,670	\$11,604,751	\$10,700,266	\$12,399,800

eans subsequently proposed that if all five republics were unable to enter at once, a union should be formed by those who wished it immediately. See GUATEMALA.

GOVERNMENT, ETC. Executive power is in a president elected for four years, and legislative power in a Congress of 42 deputies elected for one year by universal suffrage. President in 1920, Don Jorge Melendez.

SALZBURG. Before the disruption of the Austro-Hungarian Empire a crown-land of Austria; lying to the east and north of Tirol and bordered on the north by Germany. Area, 2763 square miles; pop. estimated in 1913, at 221,304. According to the census of 1910, the Austrian subjects numbered 208,562, nearly all German, and the Catholics formed 98.7 per cent of the pop. Capital, Salzburg, with a pop. estimated in 1910 at 37,300.

SALVATION ARMY. The Salvation Army is a religious body, existing in two phases, the evangelistic, which is the primary, and the social relief, which was made necessary by the evangelistic, and which operates to give permanency to many of its most important results. It was founded by the late Gen. William Booth, in London, in 1865, and was first known as The Christian Mission. Its present name was adopted in 1878. It derives its name from the fact that it works for "the salvation of mankind from all forms of moral, spiritual, and temporal distress." Its government is "military in form and its tactics militant and aggressive." It was incorporated in the State of New York in 1899.

During the year 1919, a change in method of financing resulted in greatly increased efficiency of the Army's machinery through the introduction of the Home Service Fund which the American public has generously supported. The Army continues to perform with the American Forces in Germany such welfare work as was conducted in 1918. Much of the war work adjacent to the permanent camps at home, which was originally considered as being but temporary, has so commended itself to the authorities as to require the placing of it upon a permanent basis. Child Welfare Work was carried forward in many institutions, the largest of which is the Lytton Springs Orphanage, and Industrial Farm in California, where the child population was nearly 300.

The latest available statistics (for the year ending Sept. 30, 1919) show that there were in the United States: 963 corps and outposts, 3042 officers and cadets, 152,450 indoor meetings held with a 5,949,454 attendance, 117,599 outdoor meetings with an 18,018,440 attendance, 32,738 converts, 63,968 junior meetings with an 1,869,994 attendance, 55 hotels where 1,101,700 beds were supplied and 371,334 meals supplied, 84 industrial homes where 1,498,887 meals and 518,142 beds were supplied, 11 posts and nurseries in the slums, 26 rescue homes and maternity hospitals, where 1,307,328 meals and 436,117 beds were supplied, 3 children's homes where 394,548 meals were supplied, and 201,760 Christmas dinners were supplied.

In its international characters the following figures are given for the year ending December, 1918:

Countries and colonies occupied	66
Languages in which salvation is preached	40
Corps and outposts	10,591
Social institutions	1,246
Day schools	722

Naval and military homes	24
Officers and cadets (including social)	17,476
Officers and cadets engaged in social work	3,124
Persons without rank employed wholly in S. A. work	6,238
Local officers (senior and junior)	68,676
Bandsmen (senior)	25,626
Bandsmen (junior)	5,768
Songsters	25,086
Corps cadets	16,901
Periodicals issued	76
Total copies per issue	1,210,194

Headquarters of the Army are at 120 West 14th Street, New York City.

SAMOA. A group of islands in the Pacific near latitude 14° south, of which the islands east of 171° east longitude have belonged to the United States since February 13, 1900, and the islands to the west of that line belonged to Germany till after the outbreak of the war in 1914, when they passed into the hands of New Zealand. The area of the latter group is variously estimated at from 990 to 1300 square miles with a pop. estimated in 1920 at about 35,000, the number having been reduced by loss of about 8,000 lives during the influenza epidemic of 1918 and 1919. According to the census of 1917, the Europeans numbered 1668 of whom 660 were British, 530 Germans, 236 Americans, and 42 Swedes. The area of the American group is also variously estimated at from 77 to about 100 square miles, with a pop. according to the United States Census, January, 1920, of 8,324. The chief island, Tutuila (area 55 square miles) is mountainous and well wooded and had a pop. in 1916 of 5,885. Its harbor at Pago-Pago on the southern coast is one of the best and safest in the South Seas and is an important naval station. Imports from the United States in 1920, exclusive of the precious metals, were \$275,095; exports to the United States in 1919, \$82,269.

SAMOS. One of the Anatolian Islands, formerly tributary to Turkey, but occupied by Greece during the late war and administered through a Greek prefect. Area about 181 square miles; pop. estimated in 1913 at 68,949. Capital, Vathy, with a pop. of about 8000.

SANDAY, WILLIAM. British theologian, died at Oxford, England, September 16. He was born in Nottingham, Aug. 1, 1843, graduated with honors at Oxford where he became a fellow; was ordained in 1867, and after a short period of parochial service became principal of Bishop Hatfield's Hall, Durham. In 1883 he was made professor of exegesis which chair he held till 1895 when he was elected to the Lady Margaret professorship. He made an elaborate study of the life of Christ and the theological problems involved in it. Among his theological writings may be mentioned *The Life of Christ in Recent Research* (1907); *Christologies, Ancient and Modern* (1910); *Personality in Christ and in Ourselves* (1911); and *The Primitive Church and Reunion* (1913). During the war he wrote *Deeper Causes of the War* (1914), and *The Meaning of the War for Germany and Great Britain* (1915).

SANDON, MATHIAS. See PAINTING AND SCULPTURE.

SANFORD, MARILLA. Educator, died, April 21. She was born at Old Saybrook, Conn., Dec. 19, 1836, and graduated at the Connecticut State Normal School in 1855. She had already taught school beginning in 1852. From 1871 to 1880 she was professor of history at Swarthmore College, Pa., and from 1880 to 1909, when she re-

tired, she was professor of rhetoric and elocution at the University of Minnesota.

SAN FRANCISCO, CAL. See CITY PLANNING; MUNICIPAL OWNERSHIP.

SANITATION. See GARBAGE, SEWERAGE AND WATER-WORKS.

SANTO DOMINGO. See DOMINICAN REPUBLIC.

SAO THOME AND PRINCIPE. Two islands belonging to Portugal, off the coast of French Equatorial Africa, in the Gulf of Guinea. Area, 363 square miles; pop. in 1914, 58,907, of whom 53,969 were in São Thomé. The whites numbered 1570. The chief products are cocoa, coffee, rubber and cinchona.

SARAWAK. A British protectorate comprising the northwestern part of the island of Borneo, with an area of about 42,000 square miles and a pop. estimated at about 600,000. Capital, Kuching, with a pop. of about 25,000. In 1919 the imports were \$20,265,281 and the exports \$23,957,953. The chief products are: Spices, sago, rubber, gold, and diamonds. Nuts, camphor, coal, antimony, rattan, etc., are also produced. The gold production in 1918, was valued at \$808,100. The output of coal in the same year was 42,972 tons. Petroleum is worked by an English company. The trade is chiefly with Singapore. The government was under the late Rajah, Sir James Brooke, who was succeeded May 17, 1917, by his son, Charles Vyner Brooke. British agent for Sarawak and British North Borneo, and High Commissioner for Brunei in 1920, Sir Lawrence N. Guillemard (governor of the Straits Settlements).

SASKATCHEWAN. One of the Prairie Provinces of Canada, having Alberta on the west, and Manitoba on the east, and extending from Montana and North Dakota, to the Northwest Territories. Capital, Regina. Estimated area, 251,700 square miles; population (1916), 647,835. Population of Regina (1916), 26,105. Lieutenant-governor in 1920, Sir Richard S. Lake; prime minister, W. M. Martin. See CANADA.

SAULT STE. MARIE CANALS. See CANALS.

SAURET, EMILE. French violinist, died in London, England, February 12. He was born in Cher in 1852 and studied at the Paris Conservatory and at Brussels. He taught in Berlin in 1880-81 and in 1890 was appointed professor of the violin at the London Royal Academy of Music. He was connected with the Ziegfeld Conservatory in Chicago from 1893 to 1906 and made frequent tours throughout the United States. He returned to London in 1908. Besides many musical pieces for the violin, he wrote a text-book for violinists.

SAVANNAH, GA. See GARBAGE.

SAVINGS BANKS. In June, 1920, there were 620 mutual savings banks in operation in the United States and 1087 stock savings banks. Of the mutual savings banks all but 24 were in the New England and Eastern States. Their total assets were \$5,619,017,000. Their business as measured by assets increased during the fiscal year, \$447,466,000 or about 9 per cent. Of stock savings banks the assets amounted to \$1,506,413,000, an increase of \$25,159,000 during the fiscal year. See table accompanying article STATE BANKS.

UNITED STATES POSTAL SAVINGS SYSTEM. Returns summarized in the report of the Comptroller of the Currency for the postal savings system in operation in the United States and its

colonial possessions showed total deposits on June 30, 1920, to the amount of \$139,208,954. The balance to the credit of depositors on June 30, 1919, was \$167,323,260 and the withdrawals during the year amounted to \$149,255,892, leaving a net balance to the credit of depositors on June 30, 1920, of \$167,276,322. The net increase in deposits during the year was \$2,518,832. The number of depositors on June 30, 1920, was 508,508, a decrease during the year of 57,001, and the amount due each depositor was \$309.29, an average gain of \$13.41. The aggregate assets of the system on June 30, 1920, were \$163,064,171.56 compared with \$173,353,650.59 on June 30, 1919.

SAVINGS INSTITUTIONS IN THE WORLD. The table on page 612 shows statistics of savings banks and postal savings systems in the principal countries of the world.

SAXONY. A term applied to the three following divisions of the former German empire: (1) The Kingdom (proclaimed a republic in November, 1918) of Saxony, which was the third largest constituent state of the empire; (2) the grand duchy of Saxony or Saxe-Weimar (also proclaimed a republic, and at the end of 1919 united with the new state of Thuringia, q.v.); (3) the province of Saxony in Prussia. Area of the former kingdom of Saxony, 5787 square miles; population (1910) 4,806,661; estimated (1914) 4,984,500. Area of the grand duchy, 1,394 square miles; population (1910) 417,149. Area of Prussian province, 9,756 square miles; population (1910) 3,089,275. In industry, the kingdom of Saxony is surpassed only by the leading industrial provinces of Prussia. The chief crops are: Wheat, rye, barley, oats, and potatoes. Prime minister in 1920, Herr Buck, elected April 27. See GERMANY.

SCABIES. See VETERINARY MEDICINE.

SCANDINAVIAN. See PHILOLOGY; SCANDINAVIAN LITERATURE.

SCANDINAVIAN LITERATURE. (Including works published Christmas, 1919, but not Christmas, 1920.) The literature of the three Scandinavian countries for the year was characterized by an increase in poetry and a general tendency towards idealism.

DANISH. DRAMA. In Einar Christiansen's *Thronfølger* (*The Crown Prince*) the hero symbolizes civilization in its degeneration. Emil Bønnelycke's *Den Troskyldige* (*The Credulous One*) portrays the conflict between the idealism of a poet and his prosaic surroundings. In *Dybet* (*The Abyss*) Carl Gandrup depicts a woman who makes life desolate for her three lovers as well as for herself. Helge Rode touches the Jewish race problem in *En Mand gik ned fra Jerusalem* (*A Man Went Down from Jerusalem*). Gudmundar Kamban's *Vi Mordere* (*We Murderers*), shows an intimate knowledge of human nature. Although the scene is laid in New York, the characters are European rather than American.

POETRY. A great deal of poetry was written, particularly lyrics, most of it, however, of inferior quality. L. C. Nielsen's *Sange ved Solnedgang* (*Songs at Sunset*), expresses an optimism arrived at through the conquest of despair, while the optimism found in Ludwig Holstein's *Æbletid* (*Apple Season*), impresses us as being natural with the author. Harold Bergstedt's *Bredere Vinger* (*Broader Wings*), contains some exceptionally good poetry, but on the whole it is not up to the author's earlier works.

SAVINGS BANKS, INCLUDING POSTAL SAVINGS BANKS: NUMBER OF DEPOSITORS, AMOUNT OF DEPOSITS, ETC., IN FOREIGN COUNTRIES (Compiled by the Bureau of Foreign and Domestic Commerce, Department of Commerce, from official reports of the respective countries.)									
Country	Population *	Date of Report	Form of Organization	Number of Depositors	Deposits	Average Deposit per Inhabitant	Average Deposit per Inhabitant	Average Deposit per Inhabitant	Average Deposit per Inhabitant
Argentina	8,574,000	Oct. 18, 1917	Postal savings banks.	212,881	\$4,187,348	\$19.67	\$19.67	\$19.67	\$19.67
Austria	28,763,000	Dec. 31, 1913	Communal and private savings banks.	4,385,064	1,291,041,227	294.42	294.42	294.42	294.42
Belgium	7,571,000	Dec. 31, 1912	Postal savings banks, savings department.	2,495,584	57,235,850	22.93	22.93	22.93	22.93
Bulgaria	4,338,000	Dec. 31, 1911	Postal savings banks, check department.	150,240	418,823,510	2,787.70	2,787.70	2,787.70	2,787.70
Chile	3,946,000	Dec. 31, 1911	Communal and private savings banks.	49,794	204,147,391	67.75	67.75	67.75	67.75
Denmark	2,921,000	Dec. 31, 1911	Postal savings banks.	312,462	11,854,503	238.07	238.07	238.07	238.07
Egypt	12,751,000	Dec. 31, 1918	Public savings banks.	879,659	58,181,730	66.14	66.14	66.14	66.14
Finland	3,301,000	Dec. 31, 1916	Communal and corporate savings banks.	1,556,252	385,802,359	215.78	215.78	215.78	215.78
France	39,602,000	Dec. 31, 1916	Postal savings banks.	21,970	4,497,331	21.22	21.22	21.22	21.22
Germany	5,564,000	Dec. 31, 1918	Private savings banks.	383,164	69,436,208	181.22	181.22	181.22	181.22
Hungary	21,410,000	Dec. 31, 1918	Postal savings banks.	85,538	2,986,873	34.92	34.92	34.92	34.92
Italy	36,740,000	Dec. 31, 1918	Postal savings banks.	1,923,365	591,352,006	74.64	74.64	74.64	74.64
Japan	56,350,000	Dec. 31, 1918	Municipal savings banks.	6,694,385	311,070,533	46.47	46.47	46.47	46.47
Formosa	3,671,000	Dec. 31, 1912	Postal savings banks.	20,440	1,098,288	53.73	53.73	53.73	53.73
Chozen	17,413,000	Dec. 31, 1918	Communal and corporate savings banks.	1,883	1,489,629	783.66	783.66	783.66	783.66
Luxemburg	268,000	Dec. 31, 1914	Postal savings banks.	27,205,927	5,105,989,882	187.68	187.68	187.68	187.68
Netherlands	6,779,000	Dec. 31, 1917	Postal savings banks, savings department.	1,149,251	428,023,064	372.44	372.44	372.44	372.44
Dutch East Indies	47,204,000	Dec. 31, 1917	Postal savings banks, check department.	1,069,874	58,261,000	54.46	54.46	54.46	54.46
Dutch Guiana	89,000	Dec. 31, 1918	Communal and corporate savings banks.	25,630	23,286,942	250.86	250.86	250.86	250.86
Dutch West Indies	57,000	Dec. 31, 1917	Postal savings banks.	2,639,201	652,072,959	1,092.10	1,092.10	1,092.10	1,092.10
Norway	2,629,000	Dec. 31, 1917	Communal and corporate savings banks.	6,273,500	670,635,473	108.90	108.90	108.90	108.90
Rumania	8,866,000	Dec. 31, 1918	Postal savings banks.	9,705,600	99,759,950	10.29	10.29	10.29	10.29
Russia	178,905,000	Dec. 31, 1918	Private savings banks.	15,900,550	217,861,004	13.70	13.70	13.70	13.70
Spain	20,500,000	Dec. 31, 1918	Postal savings banks.	8,065	1,721,732	21.12	21.12	21.12	21.12
Sweden	5,814,000	Dec. 31, 1918	Private savings banks.	350,993	2,510,993	7.77	7.77	7.77	7.77
Switzerland	3,880,000	Dec. 31, 1918	Postal savings banks.	1,368,378	7,152,459	5.17	5.17	5.17	5.17
United Kingdom	42,279,000	Dec. 31, 1917	Postal savings banks.	76,508	12,597,471	164.01	164.01	164.01	164.01
British India	244,268,000	Dec. 31, 1917	State savings banks.	538,986	61,278,066	118.99	118.99	118.99	118.99
Australia	5,274,000	Dec. 31, 1917	Private savings banks.	1,816,735	97,185,649	53.49	53.49	53.49	53.49
New Zealand	1,174,000	Dec. 31, 1918	Postal savings banks.	5,740	889,804	154.93	154.93	154.93	154.93
Canada	8,361,000	Dec. 31, 1918	Private savings banks.	166,438	5,408,936	32.48	32.48	32.48	32.48
Union of South Africa	7,144,000	Dec. 31, 1918	Postal savings banks.	10,750	332,579	30.94	30.94	30.94	30.94
British West Indies	1,836,000	Dec. 31, 1917	Communal and private savings banks.	4,580	97,253	21.38	21.38	21.38	21.38
British colonies, n. c. s.	28,370,000	Dec. 31, 1918	Postal savings banks.	1,432,127	333,437,909	232.83	232.83	232.83	232.83
Total, foreign countries	938,280,000	June 30, 1920	Postal savings system.	12,488,590	2,138,238,000	170.82	170.82	170.82	170.82
United States	105,083,000	June 30, 1920	Postal savings system.	866,321	128,875,444	148.76	148.76	148.76	148.76
Philippines	9,250,000	June 30, 1920	Mutual and stock savings banks.	262,780	11,140,376	42.40	42.40	42.40	42.40
Grand total	1,048,213,000	June 30, 1920	Postal savings system.	134,274,984	16,437,452,376	122.74	122.74	122.74	122.74

* The figures of population are for the nearest date to which the statistics of savings banks relate.
 * Excludes of 3,116 deposits of \$661,787 in savings banks in Porto Rico and 20,710 savings deposits of \$54,640,017 in ordinary banks.
 * The level in millions of \$100,000,000. The level in millions of dollars.
 * The level in millions of \$100,000,000. The level in millions of dollars.

In Niels Møller's *Egelunden* (*The Oak Grove*), we find poems from a period of more than 20 years, some indicative of deep thought, others written in easy and playful vein. Among them are several translations. The reflections in Edith Rode's *Digte* (*Poems*), seem to be of an autobiographical character. In *De evige Ting* (*The Eternal Things*), Otto Gelstedt shows a gain in firmness and style.

FICTION. Gunnar Gunnarson's *Salige er de Enfaldige* (*Blessed are the Simple*), is a powerful Icelandic story full of gloom and misery. Richard Gandrup's *Macpela's Hule* (*Macpela's Cave*), treats of the estrangement of a man and wife caused by outside influence. Thomas Olesen Løkken made his debut with *Bonden Niels Hald* (*Farmer Niels Hald*), which tells the story of a Jutlander who has noble ambitions for improving the conditions of himself and his fellow farmers. His motives are, however, misunderstood, he is indiscreet in his methods and ends in absolute ruin. *Syndefaldet* (*The Fall*), is a third story of the series *Ditte Menneskebarn*, by Martin Andersen-Nexø. In *Bruden* (*The Bride*), Oscar Thyregod shows how a woman leading a sad and sordid existence through her romantic imagination casts a glimmer of happiness over herself and her surroundings.

MISCELLANEOUS. Georg Brandes published his *Taler* (*Addresses*). Paul Tuxen gave us a translation of *Dhammapada*, a collection of proverbs from India. The notes are particularly helpful and scholarly.

NORWEGIAN. Poetry. Herman Wildenvey's *Alle slags vers* (*All Kinds of Poetry*), shows a certain merriment, but no very deep poetic feeling. In *Samlede digte* (*Collected Poems*), Olaf Bull published his poems from the last 10 years, all of them expressive of a strong Northern spirit. Nils Collett Vogt published a collection of selected poems.

FICTION. The problem treated by Johan Bojer in *Dyrendal*, is the effect on a woman of a childless marriage. Kristofer Uppdal's *Higeren* (*The Climber*), is highly lyric and subjective. The author succeeds in making us feel the personality of his character and the reality of the events that he relates. Olav Duun's *I blinda* (*Ye Blind Ones*), a sequel of last year's *Juvingingar*, pictures the breaking down of an old family with its traditions and ancestral worship. In *Guld-kappen* (*The Golden Cloak*), Barbra Ring tells the story of a woman who leaving her faithless husband engages in one task after another, always with success. The race referred to in the title of Kristian Elster's *Av skyggenes slegt* (*Of the Shadows' Race*), is the official class which is gradually being displaced by the farmers. The characterization is particularly good.

LITERATURE AND PHILOSOPHY. Anathon Aal wrote, *Filosofien i Norden* (*Philosophy in Scandinavia*). The method of treatment is somewhat original, but the part devoted to Swedish philosophy is rather unsatisfactory. Gunnar Heiberg's *Francke visitter* (*French Visits*), contains a number of articles full of wit and inspiration, mostly on Danish and Norwegian writers.

SWEDISH. DRAMA. The ominous atmosphere which pervades Carl R. af Uggle's *Den döda* (*The Dead One*), reminds us of Mæsterlink. The structure of the play is that of the ancient drama. *Lamporna* (*The Lamps*), by the same author is a dream play on the Faust-Margaret theme. It typifies the victory of the life of ideas over

the passive, sterile, and formal. August Brunius wrote three comedies.

POETRY. Ruben G. Berg's *September*, shows the influence of Goethe and Heidenstam. Hjalmar Lundgren in *Kiamé och medaljong* (*Cameo and Medallion*), returns to the spirit of Gustavus III. His poetry, however, gives the impression of artificiality and bookishness. In *Vindros* (*The Compass Card*), Sigfrid Siwertz shows a great facility in changing his verse to suit different subjects and to give expression to various moods. Albert Henning's *Meditationer* (*Meditations*), shows a leaning toward Romanticism. It expresses a longing away from the world of things and sensations to that of ideas and recalls Stagnelius. The chief characteristic of Erik Lindorm's *Domedagar* (*Judgment Days*), is its broad humanitarianism.

FICTION. In Dan Andersson's *David Ramms arv* (*The Inheritance of David Ramm*), we see the gradual development of insanity. The book gives the effect, however, of a number of lyric expressions of different characters rather than that of a continuous story. The lack of totality is also characteristic of Hjalmar Bergman's *Makurells i Wadköping* (*Makurell's in Wadköping*). The central point of the story is the discovery by Makurell that the son for whom he has been living is really not his son. In *Simonas kärlek* (*Simona's Love*), Ivan Bjarne treats the possibilities of the fallen woman as a wife. Ilm Wagner's *Den befriade kärleken* (*Love Liberated*), and Gertrud Almquist's *Det törstande folket* (*The Thirsting People*), both deal, though from different points of view, with the conflict between earthly love and religious conviction. Bertil Malmberg, whose work has hitherto been restricted to poetry, wrote *Fiskebyn* (*The Fishing Village*). Books inspired by the war are: Carl Bolander's *Hotell Europa*, which ends in despair of finding a solution for the ills of the world; Henry Mathis's *Livets lekar* (*Games of Life*), which seems to preach an unlimited optimism in spite of all evils, and Pär Lagerkvist's *Kaos* (*Chaos*), which, in addition to its stories contains poetry and a drama.

CRITICISM, ETC. Johan Vising wrote a book on Camões, the national poet of Portugal. In *Det röda zarriket* (*The Red Country of the Tzar*), Per Brusewitz gives his impressions from a journey through Russia.

SCHIERBRAND, WOLF VON. German-American writer, died in New York City, December 1. He was born at Dresden, Germany, in 1851, and came to the United States in 1872. Going into journalism, he was on the staff of papers in Chicago, St. Louis, and other cities, and from 1884 to 1891 he was correspondent of the Associated Press at Berlin. Among his works may be mentioned: *America, Asia, and the Pacific*; *Germany*; *The Welding of a World Power*; and *Australia, the Polyglot Empire*.

SCHIFF, JACOB HENRY. American financier, died in New York City September 25. He was among the most eminent financiers and philanthropists in this country. He was born in Frankfurt-on-the-Main, Jan. 10, 1847, of Jewish parentage and came to the United States in 1865, settling in New York. He was at first a bank clerk, then a junior member of a brokerage firm acquiring a considerable capital; and after his marriage in 1875 with the daughter of Solomon Loeb he went into the firm of Kuhn, Loeb and Company of which he became the head in 1885,

Mr. Loeb having retired. He was prominent in many of the great financial transactions of the time. His firm supported by foreign capital aided the late E. H. Harriman in financing the reorganization of the Union Pacific railroad in 1897, and in the extension of its control over the Southern Pacific and other railroads—operations involving, it is said, hundreds of millions of dollars. Though a backer of Mr. Harriman he was at the time a warm friend of the latter's adversary, the late James J. Hill. His firm served as backers for the Pennsylvania railroad and was said to have floated as much as \$100,000,000, of its securities at one time. The funds for the Pennsylvania Tunnel and the Pennsylvania Railroad Station were also raised by him; and it was through the firm's agency that \$50,000,000 of Pennsylvania bonds were raised on the Paris Bourse. Another great fund floated through his company was that for the Japanese government in the war against Russia amounting to \$200,000,000. He was a sympathizer with the Russian masses and a hater of the old régime on account of its oppression of the Jews, and during the great war regretted that the Japanese were fighting on the Russian side. In the latter part of his life his philanthropic activities absorbed most of his time. Among the corporations and institutions of welfare in which he was interested may be mentioned: The Central Trust Company; Western Union Telegraph Company; National City Bank of New York; Wells, Fargo and Company; Montefiore Home (of which he was president); Baron de Hirsch Fund (vice-president and trustee); New York Foundation (director); New York Chamber of Commerce (vice-president); Jewish Theological Seminary; Semitic Museum (Harvard); Nurses Settlement (New York); American Museum of Natural History; Metropolitan Museum of Art; American Geographical Society; American Fine Arts Society. He had been ill for the six months preceding his death. He was the father of Mortimer L. Schiff and the father-in-law of Felix Warburg.

By the terms of Mr. Schiff's will the sum of \$500,000 was bequeathed to the Federation for the Support of Jewish Philanthropic Societies in New York; \$300,000 to the Montefiore Home and Hospital in that city; \$100,000 to the Hebrew Union College at Cincinnati; and sums ranging from \$5000 to \$50,000 to a large number of other institutions. The remainder of his estate was left to his son and daughter to be divided between them equally.

SCHNEIDER, HORTENSE. French soprano, died in Paris, May 6. She was born in 1838. At the height of her career (1862-80) she was one of the most popular artists of the Théâtre des Variétés, creating the title-rôle in Offenbach's *La Belle Hélène* (1864).

SCHOLARSHIPS IN MUSIC. See MUSIC, General News.

SCHOOLS. See EDUCATION.

SCHREINER, OLIVE. British author, died in December. When she was about 20 years old she published *The Story of an African Farm*, which gave her a reputation over the entire English-speaking world. She was born in Basutoland, South Africa, in 1862, the daughter of a Lutheran clergyman then serving as a missionary in South Africa. She married in 1894, Mr. S. C. Cronwright. Her other writings include: *Dreams* (1891); *Dream Life and Real Life*

(1893); *The Political Situation* (1895 in collaboration with her husband); *Trooper Peter Halket* (1897); *An English South African's View of the Situation* (1899); and *Work and Labor* (1911). The last named, which was also widely read, conveys her strong feminist views.

SCHULZE-SMIDT, BERNARDINE. See GERMAN LITERATURE.

SCOTLAND. See GREAT BRITAIN.

SCOTT, CYRIL. See MUSIC, ARTISTS, INSTRUMENTALISTS.

SCOTT, MRS. MAXWELL (MARY MONICA). British writer, died, March 15. She was born Oct. 2, 1852, and was the granddaughter of Sir Walter Scott. She wrote: *Abbotsford and Its Treasures* (1893); *The Making of Abbotsford, an Incident of Scottish History*; *Joan of Arc* (1905); *St. Francis de Sales and His Friends* (1913), etc.

SCOTTEN, SAMUEL CHATMAN. Capitalist, died, August 5. He was born at Burlington, Iowa, Oct. 31, 1851; educated in public schools and began work as clerk in a grocery store in 1861. After 1878 he was in the grain and commission business at Chicago and later became president of the Harris, Scotten Co. After 1907 he was a member of the firm of Scotten and Syndacker. He was a director of many important commercial enterprises.

SCULPTURE. See PAINTING AND SCULPTURE.

SEALS. See ALASKA.

SEARLE, ARTHUR. American college professor, died at Cambridge, Mass., October 23. At the time of his death he was professor emeritus of astronomy at Harvard. He was born in London Oct. 21, 1837, and came to the United States where he graduated at Harvard in 1856. In 1868 he was appointed assistant in the Harvard College observatory and in 1883-7 he was assistant professor of astronomy. He was appointed to the Phillips professorship in 1887 and retired in 1912 when he was made professor emeritus. At the time of his death, he surpassed in length of service all the other members of the faculty.

SEATTLE, WASH. See GARBAGE.

SEISMOLOGY. See EARTHQUAKES.

SELANGOR. See FEDERATED MALAY STATES.

SENEGAL. A French colony in the government-general of French West Africa (q.v.), consisting of the four municipal communes of St. Louis, Dakar, Rufisque, and Gorée, and of territories directory administered by the government-general. Total area, about 74,012; population estimated in 1917, 1,444,621 of whom 5,015 were Europeans. Capital, St. Louis, (population, 1917, 23,326). Dakar is a fortified naval station and the seat of the government-general, with a population in 1918 of 25,468. The total foreign trade in 1919 was valued at \$77,266,367, as compared with \$98,622,476. The imports for 1919 were \$38,245,831; exports \$39,020,536. The leading imports in respect to value were coal, cotton goods, and cloth, and the leading exports were peanuts and gums. Great Britain held the leading place among the countries supplying imports. In respect to exports, France received nearly 91 per cent. The tonnage of shipping in 1919 was as follows: Entered, 2,277,988; cleared, 2,179,988. Local budget in 1919, 10,315,807 francs. The colony is represented by one deputy in the French parliament.

SENIOR, WILLIAM. British journalist, died at Croydon, early in October. He became a journalist in 1858 and contributed extensively to periodical literature. He was special correspondent of the *Daily News*, 1881-99. It was largely as a specialist in the sport of angling that he became known and his writings on that subject were widely read and gave him a special authority. He had charge for some years of the angling department of the *Field* and was editor-in-chief of that periodical from 1900 to 1909. Among his books may be mentioned: *By Stream and Sea* (1887); *Angling in Great Britain* (1883); *The Thames from Oxford to the Tower* (1889); *A Mixed Bag* (1895). Shortly before his death another volume on angling appeared under the title of: *Lines in Pleasant Places*.

SERBIA. A Balkan kingdom which in December, 1918, was proclaimed a part of the new unitary state of the Serbs, Croats and Slovenes. (See JUGO-SLAVIA.) It is bounded by Bulgaria on the east, Albania and Montenegro on the west, Greece on the south and is separated from Hungary by the Danube and the Save. Capital, Belgrade.

AREA AND POPULATION. The area is given at 33,891 square miles; population at 4,393,315. Belgrade, the capital, had 90,890 inhabitants, for further details, see preceding YEAR BOOKS.

PRODUCTION, ETC. The resources are chiefly agricultural and include: Wheat, corn, barley, oats, rye, and beet roots. The fruit production is important and fruit productions made up about 13 per cent of the total exports before the war. Tobacco also is produced, the output in 1919 being 15,000 tons.

GOVERNMENT. After the armistice Serbia took a leading part in the organization of the new state of Jugo-Slavia, of which the first ministry was formed Dec. 29, 1918. (See JUGO-SLAVIA.) As result of the Balkan war and of the late war, the economic condition of the country in 1920 was deplorable. Agriculture, transport, industry and commerce were reported as virtually destroyed. Many of the cities and towns had been reduced to ruins. The work of Serbian relief, however, was actively carried on during the year.

SEVENTH DAY ADVENTISTS. See ADVENTISTS.

SEVERN RIVER BARRAGE, PROPOSED. See DAMS.

SEWAGE PURIFICATION. See SEWERAGE.

SEWANE. See SOUTH. UNIVERSITY OF THE.

SEWARD, WILLIAM HENRY. Soldier and banker, died April 26. He was born at Auburn, N. Y., June 18, 1839, the son of William H. Seward, Secretary of State and served in the Civil War, taking part in the battles of Monocacy, Petersburg, Cold Harbor, and others, and was promoted for gallantry in September, 1864, to the rank of brigadier-general in the department of Shenandoah. After the war he was head of the banking firm of William H. Seward and Company.

SEWERAGE AND SEWAGE PURIFICATION. New construction of both sewers and sewage-treatment works was checked by high prices, but towards the end of the year a number of cities voted a considerable total of bonds for sewer extensions. Studies of the *activated-sludge* process of sewage treatment were continued at *Milwaukee* and resumed at *Champaign, Ill.*—the latter by the State Water Survey and

the University of Illinois. Plans for a large activated-sludge plant for Milwaukee, together with a survey of the experiments on which they were based, were described in detail by T. C. Hatton, chief engineer Milwaukee Sewerage Commission in *Engineering News-Record*, May 20, 1920. Plans for an activated-sludge plant for *Reading, England*, were approved by the British Ministry of Health late in the year. The plant will have a capacity of 4,200,000 U. S. gallons and will be the largest plant of this type in England. A *direct-oxidation* or *electrolytic* sewage treatment plant (see 1919 YEAR BOOK) for *Phillipsburg, N. J.*, was completed and one for *Allentown, Pa.*, was reported as under construction.

SEYMOUR, HORATIO WINSLOW. Journalist, died in New York City December 17. For many years he had been an editorial writer on the *New York World*. He was born in Cayuga County, New York, in 1854; was educated in the schools of Wisconsin and became city editor of the *Milwaukee News*, in 1873. He was afterwards on the staffs of the *Chicago Times* and the *Chicago Herald*, and he edited and published the *Chicago Chronicle*, 1895-1907. After 1908 he was on the staff of the *New York World* until the time of his death, with an exception of an interval in 1911-12, when he edited the *Republic* of St. Louis.

SEYMOUR, MORRIS WOODRUFF. Lawyer, died at Litchfield, Conn., October 28th. He had been at one time chief justice of the supreme court of Connecticut. He was born at Litchfield Conn., October 6, 1842, graduated at Yale 1856 and practiced law in Bridgeport after 1857, specializing in corporation and patent law. Among the positions that he held may be mentioned that of judge of the city court at Bridgeport, member of the Connecticut State senate, and lecturer in the Yale Law School.

SHACKLETON, CHARLES. See PAINTING AND SCULPTURE.

SHANTUNG. One of the 18 provinces of China Proper. Area, 55,970 square miles; population, 25,810,000. Capital, Chinan. Kiao-Chow on its eastern coast was seized by Germany in 1897, but its port Tsing-Tau was captured by Japanese and British forces November, 1914, and administered by the Japanese. By the agreement of May 25, 1915, Japan obtained from China all mining and railway privileges previously enjoyed by Germany. Protests of China, with which there was much sympathy throughout the world, made the question of possession one of the most important problems before the Peace Conference. A discussion of it will be found in the preceding YEAR BOOKS in the article, *WAR OF THE NATIONS*. There was no change in the situation in 1920, but the issue became a subordinate part of the general dispute between Japan and China. See the article in the present volume on *WAR OF THE NATIONS*.

SHEEP. See LIVE STOCK.

SHERMAN, ANDREW MAGOUN. Clergyman, died at Morristown, N. J., December 28. He was born at Marshfield, Mass., May 5, 1854, and served as a volunteer in the Civil War. In 1869 he entered the Methodist Episcopal ministry and was pastor in Methodist churches in Connecticut and Massachusetts till 1877. In 1878, he was ordained to the Congregational ministry and held pastorates in New York, Massachusetts and New Jersey from 1889 to 1892. He was a

fertile writer, especially on American and local history, and his books include narratives of historical events and descriptions of localities in New Jersey; *Historic New England Towns Revisited* (1913); *The Perplexed Detective* (1913); *A Bold Confederate Scheme Frustrated* (1913); *The Story of Fort Mifflin* (1914); and *Recollections of a Half Century and More* (1915).

SHIPBUILDING. The total tonnage (gross tons of the 1759 merchant vessels launched in 1920 from the shipyards of the world, according to Lloyd's Register of Shipping, amounted to 5,861,000 gross tons, a decrease of almost 1,300,000 from the 1919 figure, but an increase of more than 400,000 over 1918. This decline of 1,300,000 gross tons in the world's total, from the 1919 figure, was due to the decrease in the American shipbuilding programme, launchings in the United States being 2,476,000 tons, or 1,600,000 tons less than in the previous year, while British production, 2,055,000 tons, showed a gain of more than 400,000 tons.

Other countries launched a total of 1,330,000 tons during 1920, or about 20,000 tons less than in 1919. Of the vessels launched in 1920, 32 were of 10,000 gross tons or more, while nearly a third of the aggregate of ships of all types, or 1,825,000 tons, were fitted with turbine engines.

There was, however, a distinct gain over pre-war building and in comparison with the pre-war figure the launchings for 1920 throughout the world showed an increase of about 75 per cent. This is largely accounted for by the fact that the American total was nine times that for 1913 and other countries, exclusive of Great Britain, showed an advance of about 20 per cent. On the other hand it was noteworthy that for the first time since the beginning of the war the United Kingdom in 1920 exceeded its 1913 figure, the gain being about 7 per cent. The yearly output of the United States and the United Kingdom in launchings since before the war is shown in the accompanying table, the figures being in gross tons:

	United States	United Kingdom
1913	276,000	1,932,000
1914	200,000	1,683,000
1915	177,000	650,000
1916	504,000	608,000
1917	997,000	1,162,000
1918	3,033,000	1,348,000
1919	4,075,000	1,620,000
1920	2,476,000	2,055,000

Lloyds pointed out that at the beginning of 1920 the United States and Great Britain had on hand practically the same amount of construction to be completed, and credited American yards with greater speed than those in Great Britain in that the United States exceeded England's total by 20 per cent.

In the latter part of the year there was a slight decline in shipbuilding. A statement prepared by Lloyd's Register of Shipping showed that the aggregate on Dec. 31, 1920, was about 5 per cent less than on October 1, of the same year. One of the most significant points was that 454,000 tons of motor ships were under way as discussed below.

The total building in the world on Dec. 31, 1920, was given as 7,179,000 gross tons, in comparison with 7,565,000 tons at the end of the third quarter of 1920. France and Holland were

practically the only countries to show a gain in the amount of construction.

For the first time since the war period, it is pointed out, British shipbuilding shows a decline over the previous quarter. The recession was only a small one, however, 3,709,000 gross tons being in hand at the end of December, compared with 3,731,000 tons at the end of last September. The decrease of 22,000 tons compared with one of 462,000 tons for American shipyards, the aggregate under way in the United States at the end of 1920 being 1,310,000 tons, compared with 1,772,000 tons three months previously.

At the end of 1920 as a result of the changed conditions 51.6 per cent of the world's shipbuilding was being done in Great Britain, compared with 38.1 per cent at the beginning of 1920. In the same period the United States' share of the total had decreased from 37.7 per cent to 18.2 per cent. Consequently, therefore, the United Kingdom was building more than all the rest of the world combined, a position held by the United States during the period of its intensified shipbuilding campaign. In the last quarter of 1920 Great Britain's share increased 2.3 per cent, bringing her across the 50 per cent mark, while the proportion held by the United States decreased 5.2 per cent.

The status of world shipbuilding at this time compared with a year previously is shown by the following table of gross tons of shipping under way at the two periods:

	Dec. 31, 1919	Dec. 31, 1920
United States	2,966,000	1,310,000
United Kingdom	2,994,000	3,709,000
Other countries	1,901,000	2,160,000
World total	7,861,000	7,179,000

Other countries than the United States and the United Kingdom have expanded their shipbuilding facilities materially in 1920. From Germany, accurate returns were not available, but the smaller maritime nations were constructing in excess of a quarter of a million tons more than in 1920. In the same period their proportion of the world's production advanced from 24.2 per cent to 30.2 per cent. At the beginning of 1920 they were building over a million tons less than the United States, while at the end of the year they were constructing 850,000 tons more than the United States. Great Britain, which was building about 1,100,000 tons more than these nations at the beginning of 1920 led on December 31, by about 1,600,000 tons.

In connection with the work in the United Kingdom at the end of the year there were indications that deliveries were at the point of exceeding the receipts of new orders. Whereas in the quarter ended Dec. 31, 1919, new steamers on which work was begun represented a total of 601,000 tons, launchings for that quarter represented only 451,000 tons. In the third quarter of 1920 new work aggregated 591,000 tons, while launchings were 478,000 tons. For the final quarter, however, the amount of new work begun totals only 503,000 tons, while launchings represented 576,000 tons. In three months, therefore, a lead of 113,000 tons held by work begun had been changed to one of 73,000 tons for launchings.

The fact that Great Britain was resuming its place as the world's shipbuilder was indicated by the statement that of the 3,709,000 tons un-

der construction in that country 1,257,000 tons, or more than a third, was for purchasers abroad.

The tonnage of vessels actually building under the supervision of Lloyd's Register and intended to be classed with that society which forms the bases of the foregoing paragraphs at the end of 1920 amounted to 4,800,409 tons, of which 2,920,656 tons were being built in the United Kingdom and 1,879,753 tons in other countries. The society was therefore, classing more than two-thirds of all the sea-going tonnage building in the world to-day of 100 gross tons and upward.

British tonnage launched was built for foreign owners, the amount being 846,403 tons, or over 41 per cent of the total. This proportion was considerably greater than that of pre-war times, the average figure for the five years 1909 to 1913 being just over 22 per cent. Another interesting feature of the figures is that although the tonnage launched in 1913 the previous record year, was lower than that in 1920, the amount added to the British merchant fleet in 1920 was 309,000 tons less than the addition during 1913. Of the tonnage launched in 1920, 286,644 tons

THE WORLD'S SHIPBUILDING

(From Lloyd's Register of Shipping)

TABLE SHOWING THE NUMBER AND TONNAGE OF MERCHANT VESSELS OF 100 TONS GROSS AND UPWARDS LAUNCHED IN THE VARIOUS COUNTRIES OF THE WORLD DURING THE YEARS 1900-1920

Year	United Kingdom		Dominions		Canadian lake ports		Austria-Hungary		Denmark		France		Germany		Holland	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1900	692	1,442,471	38	6,967	2	2,596	12	14,889	17	11,060	66	116,858	93	204,731	61	45,074
1901	639	1,524,789	68	16,610	6	11,524	7	20,013	41	22,856	92	177,543	101	217,593	33	29,927
1902	694	1,427,558	65	18,235	4	10,584	16	15,192	44	27,148	99	192,196	108	218,961	114	69,101
1903	697	1,190,618	64	20,866	9	13,824	6	11,328	39	28,609	75	92,768	120	184,494	109	59,174
1904	712	1,205,162	55	27,253	6	3,712	40	16,645	30	15,859	69	81,245	149	202,197	109	55,636
1905	795	1,623,168	45	—	10,798	27	16,402	19	17,557	43	73,124	148	255,423	58	44,135	
1906	886	1,828,343	50	16,026	7	10,016	25	18,590	18	24,712	48	35,214	205	318,230	89	66,809
1907	841	1,607,890	83	21,479	14	24,964	7	8,717	29	28,819	50	61,635	188	275,003	60	68,623
1908	523	929,669	111	25,512	8	8,669	24	23,502	24	19,172	50	83,429	120	207,777	76	58,604
1909	526	991,066	35	6,592	3	869	15	25,006	11	7,508	51	42,197	84	128,696	52	59,106
1910	500	1,143,169	53	14,601	7	11,742	8	14,304	18	12,154	55	80,751	117	159,308	105	70,945
1911	772	1,803,844	59	16,006	3	3,656	16	37,836	18	18,689	79	125,472	154	255,532	113	93,050
1912	712	1,738,514	76	25,090	8	9,700	12	38,821	22	26,103	80	110,734	165	375,317	112	99,439
1913	688	1,932,153	77	26,744	14	21,595	17	61,757	31	40,932	89	176,095	162	465,226	95	104,296
1914	656	1,683,553	58	22,288	22	25,246	11	84,335*	25	32,815	33	114,052	89	387,192*	130	118,153
1915	327	650,919	27	13,289	4	8,725	No returns	23	45,198	6	25,402	No returns	No returns	120	113,075	
1916	306	608,285	36	22,577	4	8,994	No returns	28	35,277	9	42,752	No returns	No returns	201	180,197	
1917	286	1,162,896	80	66,475	25	27,996	No returns	23	20,445	6	18,828	No returns	No returns	146	148,779	
1918	301	1,348,120	184	230,514	22	49,390	No returns	13	26,150	3	13,715	No returns	No returns	74	74,026	
1919	612	1,620,442	235	298,495	28	60,233	..	..	46	37,766	34	32,663	*	*	100	137,086
1920	618	2,055,624	90	174,557	13	29,087	..	..	30	60,669	50	93,449	*	*	99	183,149

Year	Italy		Japan		Norway		Sweden		United States Coast		Great Lakes		Other countries		Totals	
	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons	No.	Tons
1900	36	67,522	3	4,543	42	32,751	19	5,735	196	190,962	39	142,565	48	15,439	1,364	2,804,163
1901	35	60,526	94	37,208	40	36,875	31	8,241	234	268,091	52	165,144	65	20,649	1,538	2,617,539
1902	62	46,270	53	27,181	46	37,878	32	9,030	206	223,360	45	155,814	62	29,247	1,650	2,502,755
1903	81	50,089	62	34,514	54	41,599	30	11,855	195	211,219	51	170,601	58	24,073	1,650	2,145,631
1904	35	30,016	67	32,969	67	50,469	32	10,267	208	189,430	19	49,088	45	17,987	1,648	1,987,985
1905	46	61,629	81	31,725	58	52,580	20	5,28*	157	107,368	43	195,459	36	20,272	1,576	2,514,922
1906	30	30,560	107	42,489	69	60,774	23	11,579	192	169,358	50	271,729	37	15,334	1,836	2,919,763
1907	31	44,666	73	66,254	82	57,556	28	11,781	208	217,530	47	257,145	42	26,026	1,788	2,778,088
1908	34	26,864	78	59,725	81	52,839	23	9,546	202	158,645	36	145,898	20	23,435	1,405	1,833,286
1909	28	31,217	75	52,319	45	28,601	12	6,316	73	80,485	29	129,119	24	12,960	1,063	1,602,057
1910	21	23,019	70	30,215	64	36,931	17	8,904	156	177,601	39	153,717	47	20,497	1,277	1,957,853
1911	14	17,401	109	44,359	71	35,435	11	9,427	112	95,693	30	75,876	38	17,864	1,599	2,650,140
1912	27	25,196	168	57,755	89	50,255	22	13,968	144	194,273	30	89,950	52	46,654	1,719	2,901,769
1913	38	50,856	152	64,664	74	50,637	25	18,524	182	228,232	23	48,216	83	43,455	1,750	3,332,882
1914	47	42,981	32	85,861	61	54,204	26	15,163	84	162,937	10	37,825	35	36,148	1,319	2,852,753
1915	30	22,132	26	49,408	59	62,070	27	20,319	76	157,167	8	20,293	10	13,641	743	1,201,638
1916	10	56,654	55	145,624	52	42,458	34	26,769	167	384,899	44	119,348	18	14,296	964	1,688,080
1917	11	38,906	104	350,141	44	46,103	34	26,760	266	821,115	60	176,804	27	32,538	1,112	2,937,786
1918	15	60,791	198	489,924	51	47,723	36	39,583	741	2,602,153	188	430,877	40	34,478	1,866	5,447,444
1919	32	82,713	133	611,883	82	57,578	53	50,971	852	3,579,826	199	495,559	77	79,334	2,483	7,144,549
1920	82	133,190	140	456,642	30	38,855	46	63,823	467	2,348,725	42	127,528	52	96,368	1,759	5,861,666

* Returns not complete.

UNITED KINGDOM. The shipbuilding output of the United Kingdom during 1920 was the highest ever reached in the industry, the production being 618 vessels with an aggregate gross tonnage of 2,055,624. The 618 merchant vessels included 556 steamers of a total of 1,953,014 tons, 25 motor vessels of a total of 86,940 tons, and 37 sailing vessels and barges of a total of 15,670 tons. All these vessels were built of steel, with the exception of 3 wood vessels of a total of 660 tons and 7 vessels of reinforced concrete of a total of 3794 tons. Only one sailing vessel was launched during the year, viz., a yacht of 123 tons. A considerable proportion of the

were for Norwegian owners, 201,662 tons for French owners and 131,589 tons for Italian owners, and most of these countries as stated later also made useful additions to their merchant fleets from their own yards.

The greater part of the merchant tonnage launched in the United Kingdom was, as usual, comprised in vessels ranging from 5000 tons to 10,000 tons, the total number of ships included between these limits amounting to 168. Fifteen vessels of over 10,000 tons were, however, launched during the year, and three of these were of over 200,000 tons. These vessels were the *Empress of Canada* (22,000 tons), the *Scythia*

(21,500 tons), and the *Guilio Cesare* (21,000 tons). The average tonnage of the vessels launched amounted to 3508, but as vessels of less than 500 tons were excluded, the average tonnage would be 4387. The latter figure was larger than that for 1919, but smaller than those for the two previous years, the figures for 1919, 1918, and 1917 being 4006 tons, 4593 tons and 4933 tons, respectively. Of the vessels launched, 79, with a total tonnage of 638,557, were to be fitted with steam turbines, most of which was to be geared, although two vessels were provided with combined turbines and reciprocating engines. Twenty-five motor vessels, with a total of 86,940 tons were launched during the year, 11 of these ships being of 5000 tons and upwards; the three largest motor ships launched were each of about 9500 tons.

NUMBER AND TONNAGE OF MERCHANT VESSELS LAUNCHED IN THE PRINCIPAL SHIPBUILDING DISTRICTS IN THE UNITED KINGDOM DURING THE THREE YEARS 1918-1920

District	Total 1920 No. Tons (gross)	Total 1919 No. Tons (gross)	Total 1918 No. Tons (gross)
Aberdeen	19 12,403	24 9,572	.. ..
Barrow, Maryport and Workington	6 37,480	5 8,992	3 11,004
Belfast and Londonderry	26 138,709	37 213,720	23 148,259
Dundee	10 32,797	10 15,198	8 23,860
Clyde—			
Glasgow	133 457,082	136 337,030	41 188,736
Greenock	47 223,434	58 188,717	31 160,024
Hartlepoons	16 73,221	20 82,233	25 100,413
Hull	42 30,588	48 20,326	5 25,480
Leith	17 36,517	14 20,800	11 20,421
Liverpool	34 46,938	19 38,165	4 12,486
Middlesborough, Stockton and Whitby	44 195,452	36 119,943	24 109,298
Newcastle	83 365,775	64 239,836	55 266,594
Sunderland	67 314,454	64 274,283	58 260,553

* Includes a sailing ship of 3,845 tons.

The accompanying table shows the distribution of shipbuilding work among the various districts of the United Kingdom for the three years, and from this it will be seen that the Clyde well maintains its position as the premier shipbuilding district of the country. From Glasgow and Greenock together 180 vessels with a total gross tonnage of 680,466 were launched, the tonnage being about one-third of the total for the whole of the United Kingdom. Most of the districts, as indicated in the table, show notable increases in work in comparison with that of the previous year, the only exceptions being Belfast and Londonderry in Ireland, and the Hartlepoons. In Belfast, the work of reconditioning vessels probably had a considerable effect upon the production of new tonnage.

JAPAN. Japan ranked third among the shipbuilding nations in 1920, having launched 140 steamers with an aggregate gross tonnage of 456,042. This tonnage was 155,241 less than that launched in 1919, and 33,282 tons less than the figure for the previous year. In spite of the reduction, however, the 1920 tonnage formed more than a third of the total launched outside of the United Kingdom and the United States, and was almost equal to the total tonnage launched in Japan during the 10 pre-war years 1904 to 1913 inclusive. Of the Japanese vessels launched in 1920, 30 were between 5000 tons and 6000 tons each, while 21 came between 6000 tons and 10,000 tons. The three largest vessels were an

oil tanker of 8000 tons and two steamers of 9695 tons each.

BRITISH DOMINIONS. Shipbuilding in the British Dominions showed a considerable decrease in comparison with the previous year, the 1920 tonnage launched being about 155,000 less than the figure for 1919. The Canadian tonnage launched amounted to 159,551, or 112,000 tons less than that for the previous year, while of the remaining tonnage launched in the Dominions, more than half was produced in the Hong Kong district, where two vessels, each of about 5100 tons, were launched. The Canadian tonnage included 13 steel steamers, making 29,087 tons together, launched on the Great Lakes, while on the coast and on the St. Lawrence, 17 steel steamers of between 5000 tons and 6000 tons were launched.

HOLLAND. The Dutch yards launched 99 vessels, totalling 183,149 tons, in 1920. The latter figure, it will be noticed, was 46,000 tons higher than that for the previous year and constituted, in fact, a record for the country. The figures, as usual, do not include vessels intended exclusively for river navigation, but they comprise seven vessels to be fitted with internal-combustion engines and three to be propelled by steam turbines. The latter vessels have a total tonnage of 19,000, and of the internal-combustion engined ships, two have tonnages of 5370 and 5155, respectively. The largest vessels launched in 1920 were two of about 8100 tons each, but seven other ships had tonnages between 5000 and 7500 each.

ITALY. Italy was the only other country which launched more than 100,000 tons of shipping in 1920, the total production of that country, viz., 133,190 tons, being 50,477 tons higher than the corresponding figure for 1919. The figures for Italy included Trieste, the production of this port having amounted to 29,121 tons. Of the steamers launched nine were between 5000 tons and 5800 tons each, and another vessel had a tonnage of 6500. Italy's most notable production was, however, the *Caracciolo*, of about 25,000 tons. This was said to be the largest vessel launched in 1920 in any country of the world, but it should be mentioned that it was launched as a warship and is now being converted for merchant service. Including the last-mentioned ship, eight vessels launched in Italy in 1920 were to be propelled by steam turbines, the total tonnage of these vessels amounting to 63,208.

FRANCE AND SPAIN. The French output for 1920, viz. 93,449 tons, exceeded that for the previous year by 60,786 tons, but these figures were, however, considerably lower than those for the pre-war period. The vessels launched in France in 1920 included six steamers of between 5000 tons and 6700 tons, and one of about 9500 tons. Spanish shipbuilding, on the other hand, declined during the year, the tonnage launched in 1920 being 6659 less than that for 1919. The largest Spanish steamer launched was the *Alfonso XIII*, a turbine vessel of 10,137 tons, but the 1920 figures included five steamers with tonnages between 5000 and 6000.

DENMARK, NORWAY AND SWEDEN. The Scandinavian countries, between them, launched 163,347 tons of merchant shipping in 1920, the output being 17,032 tons more than that in 1919. Denmark and Sweden both showed increases in tonnages launched, but in the former country amounting to 22,903 tons, while the Swedish in-

crease was 12,852 tons. In the case of Norway, on the other hand, the 1920 production was less by 18,723 tons than that for the previous year. As already mentioned, a considerable tonnage was built in the United Kingdom for Norwegian owners. The total figure for the Scandinavian countries included four vessels, of between 5000 tons and 5600 tons each, launched in Sweden, and three motor vessels of between 5900 tons and 7150 tons launched in Denmark. The total tonnage of vessels fitted with internal-combustion engines launched in Denmark was the largest for any foreign country, with the exception of the United States, and amounted to 24,352 tons in the aggregate.

At the end of the year there was building in France 397,000 tons, an increase from 293,000 tons on October 1, and in Holland a total of 450,000 tons, compared with 424,000 tons in the previous quarter. The gain of 130,000 tons by these two countries, however, was offset somewhat by declines elsewhere. Italy's share declined only 2000 tons from 365,000 to 363,000; but the aggregate building in the British Dominions was reduced from 213,000 to 186,000 tons and other nations also lost ground in the final quarter of 1920.

UNITED STATES VESSELS BUILT AND DOCUMENTED IN 1920. The Bureau of Navigation of the Department of Commerce reported that during the calendar year 1920, 1758 merchant vessels of 2,831,343 gross tons were built in American shipyards. American shipbuilders also built 25 vessels of 29,382 gross tons for foreign owners, making a total output of 1783 vessels of 2,860,725 gross tons for the 12 months. During the calendar year 1919 the corresponding output was 2338 vessels of 4,213,891 gross tons for American and 25 vessels of 44,250 gross tons for foreign owners, a total of 2363 vessels of 4,258,141 gross tons. Of the 1920 output, 617 vessels of 2,557,032 gross tons were built of steel, a decrease of 299 vessels and 1,012,792 gross tons compared with 1919.

The following details of vessels built and officially numbered in the United States in 1920 were reported by the Bureau of Navigation, Department of Commerce:

	Atlantic and Gulf		Pacific		Great Lakes		Western rivers		Total	
	Num-ber	Gross tons	Num-ber	Gross tons	Num-ber	Gross tons	Num-ber	Gross tons	Num-ber	Gross tons
Wood—										
Sailing	72	73,629	18	37,067	1	2,051	..	..	91	112,747
Steam	52	12,122	20	39,011	20	1,963	11	1,039	103	54,135
Gas	313	12,049	280	19,003	50	1,019	62	1,024	705	33,095
Unrigged	164	65,816	35	5,626	18	2,274	25	618	242	74,334
Total	601	163,616	353	109,707	89	7,307	98	2,681	1,141	274,311
Metal—										
Sailing	1	1,189	..	..	..	..	..	..	1	1,189
Steam	337	1,627,744	120	700,039	67	169,811	4	3,802	528	2,501,396
Gas	14	21,200	6	3,963	1	55	8	156	29	25,274
Unrigged	39	20,459	1	165	9	3,271	10	5,278	59	29,173
Total	391	1,670,592	127	704,067	77	173,137	22	9,236	617	2,557,032
Totals—										
Sailing	73	74,818	18	37,067	1	2,051	..	..	92	113,936
Steam	389	1,639,866	140	739,050	87	171,774	15	4,841	631	2,555,531
Gas	327	33,249	286	22,866	51	1,074	70	1,180	734	58,369
Unrigged	203	86,275	36	5,791	27	5,545	35	5,896	301	103,507
Grand total	992	1,834,208	480	804,774	166	180,444	120	11,917	1,758	2,831,343

* Includes 4 vessels of 25,940 gross tons built of reinforced concrete. * Includes 3 vessels of 19,116 gross tons built of reinforced concrete. * Includes 4 vessels of 1,224 gross tons built of reinforced concrete.

AMERICAN SHIPBUILDING. Considering American shipbuilding in more detail, it must be realized that since 1914 it had advanced in rank from the 58th industry in the United States to 15th.

In 1914 the total value of the output of the in-

dustries of iron and steel and their products was \$3,223,144,000, of which shipbuilding was approximately 2.75 per cent. The estimated value of the annual output of the iron and steel industries in 1920 was \$8,600,000,000, of which shipbuilding was approximately 15 per cent.

In 1914 shipbuilding, with a total value of output of \$88,682,000, ranked 58th among the industries of the United States. The construction under way in 1920 placed shipbuilding in about 15th position, surpassing such manufacturing industries as leather, furniture, chemicals, paper and wood pulp, agricultural implements, sugar and silk.

In 1920 the shipbuilding industry was again being placed on a basis of private construction and operation after war conditions. In the spring of 1919 shipyards were again permitted to accept orders for private account, and by July 1, 1919, contracts had been let for over 100,000 gross tons of steel ships. By July 1, 1920, the tonnage under construction or contracted for for private account had increased to approximately 1,700,000 gross tons.

The steel merchant tonnage on Dec. 31, 1920, under construction for private account (approximately 1,500,000 gross tons) was over six times the average pre-war output of steel merchant vessels (235,000 gross tons annually), and was approximately three and one-half times the greatest annual output prior to the war (450,017 gross tons of steel ships in 1908).

Accordingly in 1920 there was a condition not before realized since the beginning of the war. On Sept. 1, 1920, there were under construction in the United States 2,463,314 gross tons of steel merchant vessels. Of these, 1,439,498 gross tons were for private account and 1,024,816 gross tons were for the United States Shipping Board. On Sept. 15, 1920, there were under construction for private account steel vessels aggregating 1,449,859 gross tons. This was practically the same as the private account tonnage under construction on July 1, 1920, new orders having replaced the tonnage delivered. The figures for December 31st are given later in this article.

An examination of statistics on shipbuilding

for the years 1900 to 1915 inclusive will show that the total tonnage of steel merchant vessels under construction at the beginning of each fiscal year was practically the same as that turned out during the latter year.

The tonnage of the American merchant marine more than doubled during the six years 1914-20, and the 1920 tonnage was over 16,000,000 gross tons, slightly less than one-third the total world tonnage. The tonnage under construction at the end of 1920 would bring this total up to approximately 19,000,000 gross tons by July 1, 1921.

Assuming the average life of a ship to be 20 years, there would be required annually for the upkeep only of the American merchant fleet 5 per cent of this tonnage, or approximately 950,000 gross tons. This amount is an understatement as much of the American merchant in 1920 was made up of wooden ships and others rapidly obsolescent, so that sanguine authorities looked for a future annual replacement requirement of some 1,500,000 tons for at least several years.

MOTOR SHIPS. Lloyd's Register reported that during 1920 there were launched in the world 190,000 gross tons of vessels fitted with internal combustion engines. At the end of the year there were about 170 vessels of this type with an aggregate gross tonnage of about 495,000 tons under construction in various parts of the world. Of those 170 motor ships building between 40 and 50 were on order in the United Kingdom, while the majority of the others were under construction in the Scandinavian countries and in Holland and Germany. It was anticipated that fully half of the 170 vessels would be put in commission during the year 1921, adding from 700,000 to 800,000 tons to the motor ship fleets of the world. During the year 1920 there were 24 ocean-going motorships put into commission—the largest number ever completed in a previous 12-month period.

The largest motor ship completed in 1920 was the *Zoppot*, owned by a Danzig firm. She was an oil tank vessel carrying 15,000 tons, but the two 14,000-ton ships for the Glen Line, the *Glenapp* and the *Glenagle*, were perhaps more interesting ships and were equipped with machinery of much higher power. Four more vessels similar in every respect to the *Glenagle* were to be completed during the course of the year 1921. Among the more important developments in motor shipping was the construction of passenger liners for various companies. Three of these were to be commissioned for the British India Steam Navigation Company, Ltd., before the end of 1921, the first being the *Magvana*. In addition there were to be three larger and faster vessels for an Italian firm and one or two more for Scandinavian owners.

See INTERNAL COMBUSTION ENGINES.

TANKERS. In the construction of tankers of 1000 gross tons and over during 1920 the United States led all the nations. Out of a total of 640,000 gross tons launched from all countries nearly 90 per cent was in the United States. The division of the tanker tonnage was as follows for 1920, figures in gross tons:

United States	567,000
United Kingdom	65,400
Other countries	8,000
World total	640,400

At the end of 1920 the tankers under construction in the world aggregated 1,169,000 tons, of which 637,100 tons were building in American ship-yards, 422,500 in the United Kingdom, and 109,400 in other countries. This compared with a total of 795,000 tons building at the end of

September of which 545,000 were building in the United States, 232,000 in the United Kingdom, and 18,000 in other countries.

This development in 1920 was of special interest for bulk-oil carriers were in small demand in the spring of 1919, and the time charter rate fell to 20s. a deadweight ton a month for a year, or only half the rate for cargo tonnage free from government restrictions. In less than a year this rate had advanced to 60s., and in the early part of 1920 to 80s., a rise almost unprecedented in the history of shipping. Accordingly when the demand for tankers became generally known there was a rush to build oil carriers, and the books of American shipyards were crowded with new business. Only 74,000 gross tons of tankers were building in the United States for private account on Oct. 1, 1919; nine months later 815,000 tons were under construction. While oil rates were easier at the end of 1920, throughout the year the tanker situation loomed up bright amid the many uncertainties of shipping.

A typical instance of a motor ship tanker launched from the Tacoma plant of the Todd Shipyards Corporation was the 6500 deadweight-ton motorship *Kennicott* for the Alaska Steamship Company. The *Kennicott* went down the ways in 50 working days after laying of the keel.

She was 360 feet in length, and 9 feet 6 inches beam, equipped with two Diesel type engines, each developing 1200 indicated horse power. This tanker was built under the provisions of Section 23, of the Merchant Marine Act of 1920, which permits the reinvestment of taxes exempt in new construction as discussed under SHIPPING (q.v.).

AMERICAN SHIPBUILDING YARDS. The construction in 1920 was distributed between a number of yards. The Hog Island yard led in the production of tonnage, with the Newark Bay yard of the Submarine Boat Corporation second, just ahead of the Camden plant of the New York Shipbuilding Corporation, which took third rank. The Bethlehem Shipbuilding Corporation, with its Fore River, Harlan, Moore, Sparrows Point, Potrero, and Alameda plants, led in production all other organizations with more than one yard. The six yards mentioned turned out 369,350 gross tons of merchant ships for government and private interests. At the five yards of the American Shipbuilding Company, which had contracts from the Emergency Fleet Corporation to build more than a hundred ships of the Great Lakes types, there were launched 255,900 gross tons, representing 63 steel ships.

Following is a list of the 10 leading plants in the point of production:

	No. of ships	Gross tons	Total H. P.
Hog Island	46	399,950	115,000
American S. B. Co.	63	255,900	6,600
New York S. B. Corp. . .	13	148,800	113,450
Submarine boat	42	148,890	90,000
Sun S. B. Co.	14	92,800	42,000
Bethlehem (Alameda) S. B. Corp.	13	131,400	36,400
Merchant (Harriman) S. B. Corp.	16	92,160	40,000
Federal S. B. Co.	18	78,750	32,900
Western Pipe & Steel Co. .	8	70,400	22,400
Bethlehem (Sparrows Pt) S. B. Corp.	7	75,840	20,400

Naturally a number of ships were completed during the year, but on Dec. 1, 1920, the Sparrows Point yard of the Bethlehem Shipbuilding

Corporation was engaged upon more tonnage than any other shipyard in the United States. Here were being built four 535-foot passenger liners for the Shipping Board, as well as a number of large oil tankers with large carrying capacities.

The first 10 yards in the order of tonnage under construction on Dec. 1, 1920, were:

	No. of ships	Gross tons	Total H. P.
Bethlehem (Sparrows P't)			
S. B. Corp.	13	170,200	91,500
New York S. B. Corp.	13	121,318	86,900
Bethlehem (Alameda) S. B. Corp.	10	118,000	28,890
Bethlehem (Fore River) S. B. Corp.	7	99,060	24,800
Federal S. B. Corp.	16	74,750	25,800
Morse S. B. Corp.	9	67,300	33,400
Newport News D. D. & S. B. Co.	5	62,100	26,600
Northwest Steel Co.	7	56,000	22,400
Hog Island	7	56,000	17,500
G. M. Standifer Const. Co.	4	48,000	12,000
Chickasaw S. B. Co.	8	45,488	24,800

By the end of 1920 there was a total of 445 steel ships, aggregating 1,742,599 gross tons, under construction in American shipyards, for both private and government account, according to the bulletin of the American Bureau of Shipping. The Shipping Board's fleet under construction had dwindled to 65, while a grand total of 380 was on the ways for private interests.

The bulk of the shipbuilding being produced for private lines was on the Atlantic. In all 189 ships, of 772,929 gross tons, were being built in Atlantic shipyards; 43, of 302,645 tons, on the Pacific; 31, of 77,319 tons on the Gulf; six, of 11,916 tons on the Great Lakes, and 111, of 70,375, in the interior. The Shipping Board tonnage was distributed geographically as follows: Atlantic, 36, of 318,980 tons; Pacific, 19, of 127,006 tons; Gulf, nine, of 58,725 tons; Great Lakes, one ship of 2677 tons.

The range in gross tons showed that the greatest number of ships under way at the end of the year were river craft. The following table shows the size of the craft then building:

Size Range	No.	Gross Tons
under 500	95	32,667
501 to 1000	116	86,041
1001 to 2000	12	17,380
2001 to 3000	8	22,346
4001 to 4000	16	56,218
4001 to 5000	6	27,668
5001 to 6000	38	215,518
6001 to 7000	51	341,063
7001 to 8000	42	312,387
8001 to 9000	28	201,549
9001 to 10000	9	88,680
10001 to 11000	22	231,280
11001 to 12000	..	.....
12001 to 13000	..	.....
13001 to 14000	8	108,000
Total	445	1,742,599

Late in the year the American Bureau of Shipping (see 1916 YEAR BOOK, article SHIPBUILDING) announced that it had under advisement a proposal to extend its classification facilities to the vast fleet of American craft engaged in commerce on rivers and in harbors. This would bring under classification towboats, steamboats, barges of all descriptions, car floats, and canal boats. It was believed that this would eliminate certain preventable casualties and would be reflected in consequent lowering of insurance rates.

Following are tables showing the steel tonnage building at the end of the year for private interests and for the Shipping Board:

FOR PRIVATE ACCOUNT		
Type and fuel	No.	Gross tons
Cargo—Coal	17	9,987
Oil	57	222,690
Coal and oil	8	46,544
Total	220	363,056
Tanker—Oil	115	844,689
Coal and oil	1	4,000
Non-prop.	44	23,439
Total	160	872,128
Grand Total	380	1,235,184

FOR SHIPPING BOARD		
Type and fuel	No.	Gross tons
Cargo—Oil	9	60,634
Coal and oil	24	151,561
Total	33	212,195
Tanker—Oil	8	55,000
Transport—Oil	4	30,220
Passenger and cargo—Oil	18	189,000
Coal and oil	2	21,000
Total	32	210,000
Grand Total	65	507,415

See SHIPPING, UNITED STATES.

SHIPPING. In the aftermath of the World War shipping inevitably figured not only on account of the vast destruction by German submarines and extraordinary efforts at replacement and to provide new facilities for transport, but in the general attempts at restoring commercial activity on a peace basis in view of new and changing economic conditions. As will appear from the table on page 622 the world's steam tonnage in June, 1920, was some 20 per cent greater than on June 30, 1914, but at the later date the amount of available cargo was only about two-thirds what it was before the war. Operating costs had increased threefold over ante-bellum days, ranging all the way from wages to fuel, while, as was inevitable, with a surplus of tonnage and no increase in commerce, rates had declined from previous high levels to a point even lower than in the spring and early summer of 1914. Much of this decline occurred in 1920, particularly in the rates on such cargoes as coal, grain, cotton, and other bulk shipments that ordinarily form nearly two-thirds of the ocean freights. At the beginning of the year the freight rate on coal from Hampton Roads to France or Rotterdam was quoted about \$23 a ton, while before the end of 1920 it had reached the lowest level since 1914, \$4.75 a ton. Grain from Buenos Aires to the United Kingdom was being shipped at the end of the year 1920 for 47s. 6d. a ton, as compared with 225s. in February and 30s. in 1913. Piece-cargo rates, which were controlled by agreements between the liner companies, also broke during 1920, but not so sharply.

On the other hand there were increases during the year in oil and passenger rates, and from a limited demand for oil carriers in 1919, there was in 1920 active seeking after tankers and high prices were paid for both charters and for freight. This led to new construction and orders on a greater scale than for other types of craft. (See SHIPBUILDING.) One reason for the increased passenger fares were the higher operating costs analogous in part to those of a hotel on land, but notwithstanding this there was in the first part of the year active passenger business. Steerage

business increased during the year but fears were expressed that legislation to restrict immigration to the United States to be passed by Congress might interfere with this seriously.

The great revival in shipping represented heavy investments in marine transportation not only in the United States but throughout the world and the decline in ocean borne commerce due to world conditions naturally developed serious conditions. There were failures of companies that had been organized to purchase or build steamships at the high prices and by the end of 1920 there was little encouragement for an immediate improvement.

The accompanying table, condensed from Lloyd's Register of Shipping, shows the gross tonnage of the world's steamers, according to nationality, in June, 1914, 1919, and 1920, the returns covering vessels of 100 gross tons or over.

Country	June, 1914 Gross tons	Gross tons June, 1919	Gross tons June, 1920
United Kingdom	18,892,000	16,345,000	18,111,000
British Dominions	1,682,000	1,683,000	2,082,000
United States:			
Seagoing	2,027,000	9,773,000	12,406,000
Great Lakes	2,260,000	2,160,000	2,119,000
Austria-Hungary	1,052,000	713,000	.....
Belgium	341,000	306,000	410,000
Brasil	268,000	493,000	475,000
Denmark	770,000	631,000	719,000
France	1,922,000	1,962,000	2,963,000
Germany	5,185,000	3,247,000	419,000
Greece	821,000	291,000	497,000
Italy	1,430,000	1,288,000	2,118,000
Japan	1,708,000	2,325,000	2,996,000
Netherlands	1,472,000	1,574,000	1,778,000
Norway	1,957,000	1,597,000	1,980,000
Spain	884,000	709,000	937,000
Sweden	1,015,000	917,000	996,000
Other countries	1,778,000	1,758,000	2,954,000
Total steam tonnage	45,404,000	47,897,000	53,905,000
Sail tonnage (net for 1914 and 1919) ..	3,686,000	3,022,000	3,409,000
Grand total	49,090,000	50,919,000	57,314,000

Under the heading "Other countries" for 1920 are included about 1,000,000 gross tons of former German ships, the allotment of which among the victorious nations had not been made when the table was compiled.

The world's increase in shipping during the year 1919-20 had been 6,400,000 gross tons, or double the increase in any previous year, and shipbuilding was proceeding in 1920 at double the pre-war rate. The increase in shipping since the outbreak of the war in 1914 was 8,224,000 gross tons, while the increase during the six years from 1908 to 1914 was 8,167,000 gross tons. The seaborne cargoes of the world in 1920 as already stated undoubtedly were less than before the war because normal production had not been resumed in most countries, reducing generally the volume of export cargoes. Furthermore, every nation which took part in the war incurred heavy debts which involve high taxes, lessening further its ability to import anything but necessities. Nevertheless, there was tonnage to move all available cargoes but the loss of passenger ships had not been made good. While American steam tonnage has increased by 10,400,000 gross tons since 1914, there was nearly 2,000,000 gross tons less for the rest of the world.

UNITED STATES SHIPPING. According to the Annual Report of the Commissioner of Navigation the year 1919-20 was one of maximum records in most branches of American shipping and shipbuilding not likely to be equaled for years to come. As officially summarized the following significant statements are made:

1. The total American registered, enrolled, and licensed tonnage on June 30, 1920, was 16,324,024 gross tons, three times the tonnage in 1914 of Germany, whose former place as the second maritime power the United States assumed.

2. The year's increase in American shipping was 3,416,724 gross tons, an annual increase larger than the whole world's increase during any year before 1914.

3. The American ships built and documented during the year 1919-20 aggregated 3,880,639 gross tons, an output comparable only to the world's pre-war record launching of 3,332,882 gross tons in 1913 and the British record of 3,808,056 gross tons under construction on June 30, 1920. At the end of December, 1919, American shipyards had built ships (including a small tonnage for foreign owners) at the rate of 4,258,-

141 gross tons per annum and at the end of March, 1920, American yards had built steel ships alone at the rate of 3,679,285 gross tons per annum. The peak of annual wooden-ship production, 1,021,020 gross tons, had been reached at the end of June, 1919, and declined to 297,864 gross tons during the fiscal year 1919-20.

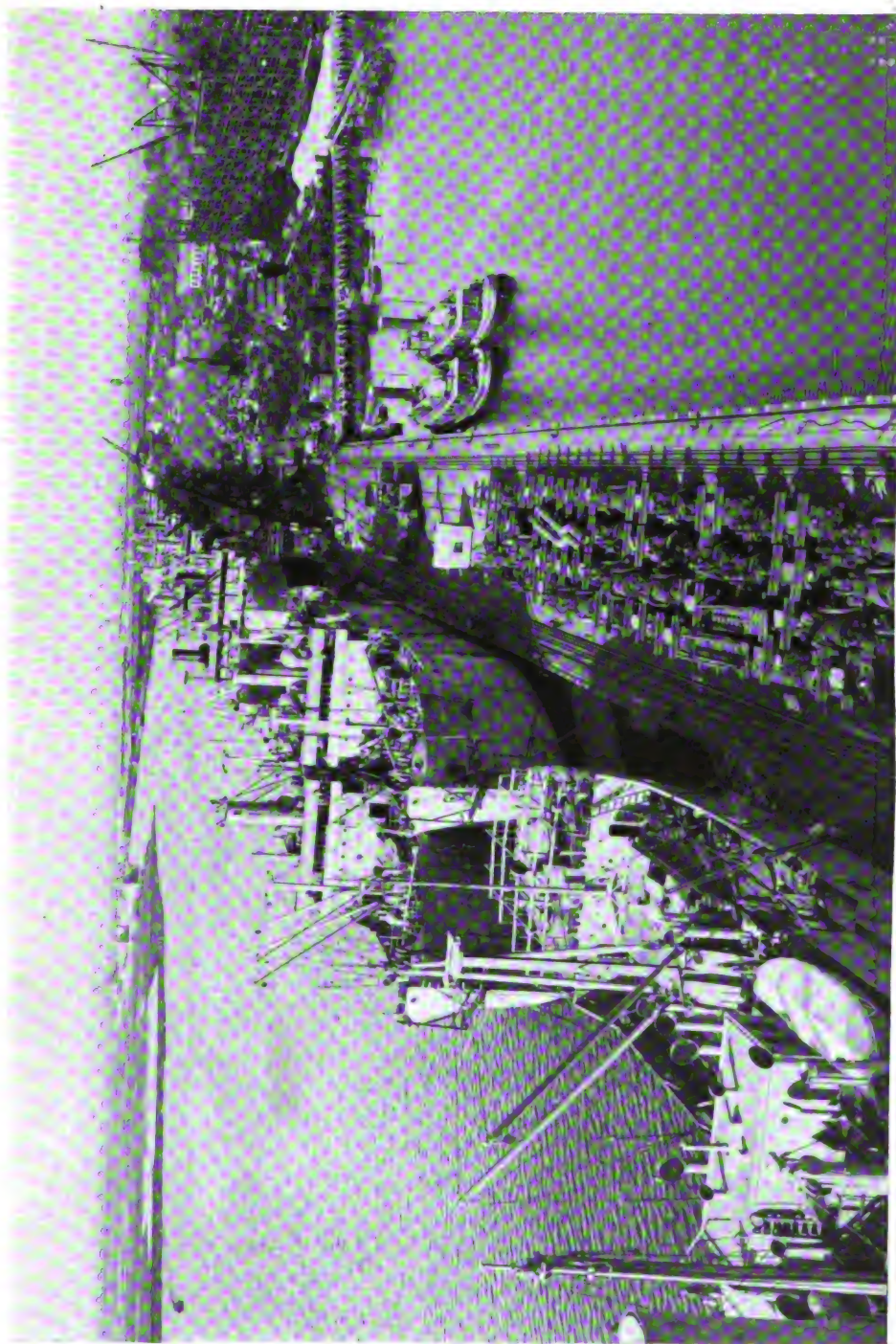
4. American ships registered for foreign trade on June 30, 1920, aggregated 9,928,595 gross tons, nearly tenfold the tonnage so registered in 1914.

5. This registered tonnage during normal domestic conditions of trade, control, and production would suffice to carry about 60 per cent in value of the foreign trade of the United States and, in fact, during the years 1919-1920 carried 45 per cent in value of American exports and 30 per cent in value of imports, while in 1914 American ships carried only 10 per cent in value of exports and imports.

6. The increase during the year 1919-1920 in United States tonnage registered for foreign trade was 3,258,869 gross tons, or virtually 50 per cent, and was by itself more than the tonnage under any flag but the British (which amounted to 20,582,652 gross tons), slightly exceeding the total of 3,245,194 gross tons under the French flag, which ranked next to the American.

7. The clearances of American ships in foreign trade aggregated almost 29,000,000 net tons, or close to 52 per cent of the total clearances and double the percentage of 1914.

8. For the first time in a third of a century one-half of the officers and crews of American



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NEWARK BAY SHIPYARD

9

NUMBER, GROSS TONNAGE, AND DESCRIPTION OF THE VESSELS OF 100 TONS AND UPWARD BELONGING TO EACH OF THE SEVERAL COUNTRIES OF THE WORLD, AS RECORDED IN LLOYD'S REGISTER, 1920-21.

Flag	Steamers and motor vessels			Sailing vessels			Total			Steel			Iron			Wood and composite			Total			Grand Total		
	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons	No.	Gross tons		
British:																								
United Kingdom	7,232	17,798,871	717	276,498	164	35,484	8,113	18,110,653	239	158,847	60	31,466	149	29,458	448	219,771	8,561	18,380,424						
Australia and New Zealand	367	566,325	75	30,244	137	31,392	579	627,961	6	3,198	14	10,095	29	7,986	49	21,279	628	649,240						
Coast	288	572,309	27	26,527	191	84,324	506	688,160	7	10,265	4	3,823	301	108,585	312	122,673	818	805,833						
Lakes	66	162,936	5	4,952	5	2,612	76	170,500	1	990							76	170,500						
India and Ceylon	115	164,845	11	9,059	1	664	127	174,508	1	990			41	10,825	42	11,815	169	186,823						
Other Dominions	254	303,026	62	18,877	62	24,195	378	376,098	19	13,088	17	8,648	165	42,503	201	64,284	579	440,832						
Total	8,322	19,568,112	897	396,157	580	178,611	9,779	20,142,860	272	186,388	95	54,027	685	199,357	1,052	489,772	10,881	20,582,652						
American (U.S.)																								
Sea	2,620	10,992,189	118	197,236	835	1,216,898	3,578	12,406,123	89	160,619	39	54,751	1,188	1,168,881	1,316	1,883,751	4,889	13,789,874						
Northern Lakes	450	2,099,184	10	10,988	6	8,396	466	2,118,568	26	88,861					26	88,861	492	2,207,429						
Philippine Islands	22	21,709	22	19,361	27	8,614	71	49,684						5	2,302	76	51,986							
Total	3,092	13,113,082	150	237,565	868	1,233,708	4,110	14,574,375	115	249,480	39	54,751	1,193	1,170,883	1,347	1,474,914	5,457	16,049,289						
Argentinian	129	122,178	19	7,508	2	487	150	130,118	25	10,115	4	3,554	19	6,236	48	19,905	198	150,023						
Belgian	191	390,487	7	6,930	10	13,026	208	410,423	2	2,915	1	1,423	2	351	5	4,689	213	415,112						
Brazilian	312	438,999	31	33,805	6	2,420	348	475,224	8	3,564	5	7,263	89	11,809	52	22,636	400	497,860						
Chilian	59	63,752	20	22,894	11	1,968	90	88,612			6	9,910	16	5,266	22	15,176	112	103,788						
Chinese	68	115,116	13	15,359	21	12,359	102	142,834									102	142,834						
Cuban	26	37,367	6	3,337	8	4,620	40	45,824	5	5,657	2	1,437	6	1,021	13	8,115	53	58,439						
Danish	432	677,172	47	27,565	43	14,707	522	719,444	86	27,574	16	19,045	171	36,748	223	83,967	745	808,411						
Dutch	869	1,757,120	46	15,222	7	1,050	922	1,773,392	51	14,720	12	2,427	12	2,857	65	20,004	987	1,793,396						
French	63	63,769	27	11,090	31	7,406	121	82,295	19	27,139	12	17,545	160	89,710	191	84,394	312	166,899						
German	1,073	2,593,609	145	104,875	182	264,745	1,400	2,963,229	98	198,973	8	12,157	252	70,835	358	281,965	1,758	3,245,194						
Greek	820	374,769	80	44,460	1	209	991	419,438	206	240,411	4	4,461	27	8,361	237	253,283	1,188	672,671						
Italian	174	413,264	105	71,976	15	11,756	294	496,996									405	530,261						
Japanese	582	1,898,065	140	150,377	67	69,987	789	2,118,429	20	14,594	30	37,212	276	72,158	326	123,964	1,115	2,242,393						
Norwegian	1,090	2,612,721	87	128,657	763	239,500	1,940	2,995,878									1,940	2,995,878						
Peruvian	1,197	1,798,066	144	89,893	255	31,601	1,596	1,979,560	73	124,999	68	93,905	40	20,924	181	239,828	1,777	2,219,358						
Portuguese	22	62,667	1	624	4	2,847	27	66,138	1	2,528	3	4,179	38	16,117	42	22,824	69	88,982						
Rumanian	122	220,053	16	18,734	5	1,911	143	235,698	5	5,827	1	814	100	33,826	106	39,967	249	275,685						
Russian	34	71,041	4	3,076			38	74,117							1	432	89	74,549						
Spanish	873	437,116	139	70,261	12	2,187	524	509,564	4	5,507	2	2,060	83	17,416	89	24,983	618	584,547						
Swedish	395	799,594	160	124,356	16	13,430	601	927,280	6	5,988	15	22,041	127	81,901	148	59,753	749	997,030						
Uruguayan	618	784,717	273	168,364	181	43,322	1,072	986,423	19	16,984	11	14,265	195	45,253	225	76,502	1,297	1,072,923						
Other countries	26	47,424	5	2,501	3	1,532	34	51,457	3	4,054	7	6,946	8	1,880	13	12,380	47	63,837						
Flag not recorded	197	153,315	46	39,263	22	7,766	265	200,344	6	2,205	1	1,342	131	32,554	138	36,101	403	236,445						
Total	20,709	49,848,335	2,673	1,812,813	3,131	2,243,540	26,513	53,904,688	980	1,151,378	334	372,687	3,768	1,865,317	5,082	3,409,377	31,595	57,814,065						

ships in foreign trade were American citizens, born or naturalized.

The accompanying table also from the Report of the American Commissioners of Navigation shows at a glance the changes which had taken place year by year, beginning with the fiscal year ended June 30, 1914, in the gross tonnage of American shipping (the gross ton being 100 cubic feet of the entire closed-in spaces of the ship, including those occupied by engines, boilers, and bunker coal as well as those available for cargo or passengers):

June 30	Coasting Trade			
	Foreign trade	Great Lakes	Sea and river	Total
1914...	1,076,152	2,882,922	3,969,614	7,928,688
1915...	1,871,543	2,818,000	3,699,886	8,389,429
1916...	2,191,715	2,760,815	3,517,119	8,469,649
1917...	2,446,399	2,769,824	3,654,814	8,871,037
1918...	3,603,706	2,708,528	3,612,289	9,924,518
1919...	6,669,726	2,635,680	3,601,894	12,907,800
1920...	9,928,595	2,595,062	3,800,367	16,324,024

As accounting for the above increase of nearly 9,000,000 gross tons in the American shipping in the foreign trade, it may be said that the ship registry act of 1914 (See YEAR BOOK for 1914, article, SHIPBUILDING) transferred to American registry, American owned foreign built ships amounting to 752,652 gross tons, while the seized German ships registered on June 30, 1920, numbered 56 and amounted to 309,893 gross tons. In addition about 300,000 gross tons were then temporarily in military or naval service. The remainder came from building under war conditions.

In the calendar year 1920 according to the statistics of the Department of Commerce American vessels carried a larger proportion of the country's water-borne export trade as measured by value than during any previous year since the increase of the United States merchant marine. The total value of water-borne exports in 1920 was \$7,145,448,264, of which vessels under the American flag moved \$3,116,352,644, or more than 43 per cent. In 1919 out of an aggregate of \$6,951,358,746, American ships accounted for \$2,549,505,970, or about 36 per cent, and in the preceding year they transported \$965,629,697, or less than 20 per cent of a total of \$5,155,583,080. In the fiscal year 1914 American ships carried commodities valued at \$368,359,756, or 0.7 per cent of the total foreign trade, which was \$3,785,468,512.

This increased trade was at the expense of the British merchant marine whose activity in this field declined. In 1918 British bottoms moved American exports valued at \$2,195,823,050, or more than 42 per cent of the aggregate; in 1919, \$2,452,935,350, or approximately 35 per cent, and in 1920, \$2,587,876,023, or about 36 per cent. Norwegian shipping occupied third position during 1919 and 1920, but in the latter year its proportion fell to less than 8 per cent.

The record of clearances in export trade already referred to by the Commissioner of Navigation further reflected the gains by American shipping, which contributed in 1920 slightly more than half of the net tonnage so cleared. It is well worthy of record that American ships predominated in the trade with North and South America and supplied three-sevenths of the tonnage cleared to Asia. In the clearances to Europe, Oceania, and Africa foreign shipping re-

tained a commanding lead, although less marked than in some preceding years.

The accompanying table shows the value of American water-borne exports distributed according to the flags of the ships carrying them during the year 1920, with comparisons with 1919:

Carried in—	Years	
	1919	1920
American vessels.....	2,549,505,970	3,116,352,644
Foreign vessels—		
Belgian	102,986,289	76,869,551
British	2,452,935,350	2,587,876,023
Danish	140,606,725	71,841,461
Dutch	164,844,666	158,817,042
French	168,289,016	166,125,542
German	130,619	9,671,133
Italian	241,188,601	215,440,522
Japanese	359,844,178	208,858,613
Norwegian	401,873,116	286,681,600
Spanish	101,282,018	113,324,461
Swedish		54,074,324
All other	278,427,203	130,515,848
Total in foreign vessels	4,401,852,776	4,029,095,620

Below is shown the net tonnage cleared in American export trade during 1920, with comparisons for the preceding year:

	Year 1919	
	American	Foreign
Europe	6,010,148	13,868,195
No. America	16,381,850	8,384,968
So. America	1,608,590	1,359,620
Asia	658,272	1,724,829
Oceania	206,888	568,877
Africa	131,328	363,086
Total	24,992,076	26,264,575

	Year 1920	
	American	Foreign
Europe	7,825,420	16,941,890
No. America	21,924,106	11,715,824
So. America	2,349,725	2,138,728
Asia	1,206,890	1,686,447
Oceania	386,157	585,227
Africa	388,680	722,948
Total	34,080,978	33,790,594

UNITED STATES SHIPPING BOARD. This department of the government was rather a storm centre during 1920 both as regards its policies and its administration. In its annual report for the fiscal year ended June 30, 1920, the Shipping Board stated that it had established 209 freight services to all parts of the world with the great fleet of merchant vessels produced by American shipyards. During this 12 months' period the shipbuilders had delivered to the United States government 1002 ships aggregating 5,694,567 dead-weight tons.

Largely as a result of the work of the Shipping Board the United States in 1920 occupied second place in the world's shipping, and on completion of the corporation programme it would probably have as much ocean-going tonnage as all the other countries combined, with the exception of Great Britain. On June 30, 1920, the entire sea-going American merchant marine of ships, over 750 dead-weight tons in capacity, represented 3404 vessels of 16,918,212 dead-weight tons, not including over 2,000,000 tons of shipping on the Great Lakes.

On June 30, 1920, the United States Shipping Board had a total of 209 established general cargo routes of which 202 were between United

States and foreign ports and between United States ports, and seven between foreign ports. These various berths afforded shippers 229 services.

A further subdivision shows that of the 202 general cargo berths there were 100 from North Atlantic, 27 from South Atlantic, 54 from Gulf and 21 from Pacific coast ports. Among these were many which were newly established.

The maintenance of the fleet cost the Shipping Board about \$70,000,000 annually in repairs.

For repairs to the ex-enemy vessels and reconditioning charges after their delivery to the United States Shipping Board, \$5,413,789.40 was expended.

Conclusions on the comparative merits of the various cargo carriers built by the Shipping Board were thus summed up in the light of several years' operating experience. The Hog Island type was found to be the most desirable for general service. The Submarine Boat Corporation type was well fitted for service in the Baltic and Scandinavian trade. Light draft lake-type vessels were admirable for the West Indies trade, particularly the south ports of Cuba. Larger lake-type vessels were well suited for various coast-wise services and in trade to northern ports of Cuba. Nine of the larger lake-type were employed in Oriental feeder service, this service calling at the smaller outports, collecting cargo and bringing it to the regular ports of call. Vessels of the 8800 dead weight class and also the 9500 dead weight were especially suitable for the cotton and grain trade on account of their size, but during the off cotton and grain season great difficulty existed in filling ships of this size on the same berth and maintaining the same schedule as would exist during the cotton and grain season. At such off season periods vessels of the Submarine Boat Corporation type and the Japanese constructed type, approximately 6400 dead weight, were considered more suitable as substitutions, while the larger ships were diverted to other services.

By June 20, 1919, the sales division of the Shipping Board had sold 426 ships, aggregating 2,195,440 dead weight tons, for a consideration of \$279,914,594.31, generally on a deferred payment plan. A summary of the sales follows:

New steel vessels:	No. vessels	Dead weight tons	Sales value
Cargo	131	820,761	\$182,643,398.70
Refrigerator	3	25,553	5,539,607.71
Frgh. & pass.	2	10,650	3,288,000.00
Passenger	2	8,610	2,250,000.00
Reconveyances (steel):			
Cargo	38	287,248	32,227,683.78
Tankers	37	385,592	50,552,290.68
Passenger	2	9,972	1,690,372.66
Reconstruction			
lakers (cargo) ...	27	100,201	4,642,104.12
Ex-Austrian (steel):			
Cargo	5	29,588	4,099,082.50
Ex-German (steel):			
Cargo	33	191,676	24,283,491.00
Passenger	4	20,402	750,000.00
Frgh. & pass.	1	2,620	300,000.00
Sailers	6	22,197	1,220,835.00
Tugs	1	.....	21,000.00
Wood vessels:			
Cargo—			
New	34	150,576	7,095,352.21
Old	1	2,700	10,000.00
Wrecks	3	10,828	35,631.00
Barges	45	88,416	2,395,400.00
Composite vessels (cargo)	6	20,850	1,085,000.00

New steel vessels:	No. vessels	Dead weight tons	Sales value
Concrete vessels (tanker)	1	7,000	700,000.00
Tugs:			
Wood	22	.....	1,744,400.00
Steel	27	.....	3,396,000.00
Total	426	2,195,440	\$279,914,594.31

During the year, the Board authorized the transfer of 367 vessels, aggregating 263,632 gross tons to foreign registry. The types were: 305 wooden vessels, 155,686 tons; 55 steel vessels, of 97,879 tons; 6 iron vessels, of 7907 tons, and 1 composite vessel of 2100 tons.

The total losses of Shipping Board vessels amounted to 22 ships, of 97,135 dead weight tons, 9 of which were steel, 12 wood, and 1 concrete. The steel ships with their dead weight tonnage, date of loss, etc., were as follows:

Steel cargo—

Carydon, 4062, Sept. 9, 1919, foundered and sunk in Bahama Channel.

Council Bluffs, 4140, Nov. 13 1919, sunk off Terschelling; total loss.

Lake Conway, 2875, Sept. 9, 1919, lost in hurricane in Gulf.

Lake Licking, 3525, Feb. 21, 1920, stranded off Cuba.

Lake Stobi, 4155, June 1, 1920, stranded off Gota Islands.

Liberty Glo, 7600, Dec. 8, 1919, struck mine in North Sea; total loss.

West Aleta, 8660, Feb. 19, 1920, stranded on Terschelling.

West Arvada, 8800, Sept. 16, 1919, sunk near Dutch coast; total loss.

Total (eight vessels), 43,817.

Steel refrigerator—

Polar Land, 5520, Nov. 9, 1919, sunk 75 miles off Cape Breton.

Total (nine steel vessels), 49,337.

The activity of the Shipping Board in other directions may be appreciated by the fact that by 1920 a chain of foreign branches had been established with representatives in the principal ports of Europe and Scandinavia. In less than a year, or by June, 1920, there had been organized branch offices at the following places: In the United Kingdom, London, Liverpool, Manchester, Cardiff (for the whole of the Bristol Channel), Fowey, Hull, Newcastle; on the Continent, Helsingfors, Stockholm, Gothenburg, Copenhagen, Danzig, Hamburg, Rotterdam, Antwerp, Paris, Dunkirk, Le Havre, Brest, St. Nazaire, La Rochelle, Bordeaux, Gibraltar, Barcelona, Marseilles, Naples, Piraeus, Constantinople, Fort Said. Other ports were covered by traveling representatives. On June 30, 1920, the department had under its supervision in the United Kingdom ports 140 vessels, in Continental ports, 77, in European waters 114, a total of 331 vessels.

Reference already has been made to the amount of foreign commerce engaged by the United States merchant marine base on values. According to a survey of all cargo vessels entering and clearing in the foreign trade for the first six months of 1920, made by the Shipping Board, ships under the American flag were carrying about one-half of the ocean-borne commerce to and from the United States. The relative volume of trade is shown by the following analysis:

	Vessels	Deadweight tons	Cargo tons
American ships	9,550	51,584,620	22,724,217
Other ships	6,008	35,397,080	15,273,967
Total	15,558	86,981,700	37,998,184

As regards the export trade, American ships, composing 61.6 per cent of the vessels engaged, carried 51 per cent of the cargo, while foreign ships 38.4 per cent of the ships engaged, moved 49 per cent of the exports. A better showing was made in the import trade. The freighters of American documentation, 61.2 per cent of the ships engaged in the traffic, transported 75.9 per cent of the cargo tonnage, while the vessels of other nations, 38.8 per cent of the total number, carried 24.1 per cent of the freight.

The original programme adopted prior to the signing of the armistice naturally involved a greater number of ships than could be utilized even under normal peace conditions not to mention the curtailed commercial activity of 1920, the fleet, so provided, would have been composed of 3268 ships, of 18,381,276 d. w. tons, had not 961 ships, of 4,697,465 d. w. tons, been canceled after the signing of the armistice. The expenditures of the government were thus reduced \$650,000,000. Accordingly the net shipbuilding programme as of June 30, 1920, contemplated 2315 ships, of 13,875,711 d. w. tons.

In view of the foregoing discussion of the activity of the Shipping Board as revealed in its annual report, it must not be inferred that its work or its personnel was free from criticism. There were during the year serious charges of extravagance, waste, mismanagement, and even graft, which were more or less voiced in investigations, and rather generally in the public press. Here after the military and naval expenditure went the peoples' money raised from Liberty Bond sales and taxes and a critical spirit was general. In particular one feature of the Shipping Board's work in 1920 was its failure to dispose of war-built vessels. It was urged in defense that any new shipping company expanding in three years to 7,454,000 gross tons would be cumbersome and inefficient, but there was no little censure for the Board for adhering stubbornly to inflexible policies at variance with facts. It was charged that the Board's bungling had saddled the taxpayer with the maintenance and unprofitable operation of a huge fleet of expensive ships; for the operating expenses as shown by the consolidated balance sheet of June 30, 1920, exceeded the income by more than \$500,000,000.

By the end of 1920 the situation had not cleared and the outlook for the American merchant marine was not altogether promising. It must be realized that while the seagoing steam tonnage over 1000 gross tons increased from 1,601,000 gross tons on June 30, 1914, to 11,146,000 tons on Dec. 1, 1920, two-thirds of it was owned by the Shipping Board built under war time conditions and cost around \$200 a deadweight ton. The most efficient operation of a \$200-a-ton ship cannot possibly meet the competition of European and Japanese companies, some of which during the year had written off their steamers to as low as \$8 a deadweight ton.

In view of the statements just made it may be difficult to appreciate the fact that 237 companies with an authorized capital of \$50,000 or greater were organized in 1920 to engage in some branch of shipping activity, according to the

records specially maintained by *The Journal of Commerce* (New York). Of these 96 were started with an authorized capital of \$1,000,000, or greater. The indicated investment in the shipping industry involved in their formation was \$585,448,000, this capitalization figure setting a new high record for any 12-month period since the outbreak of the war in 1914. In 1919, the aggregate authorized capital of shipping concerns chartered was only \$323,613,000, or more than \$250,000,000 below last year's total. The smaller aggregate stood as the previous record.

The volume of new enterprise in the shipping field followed pretty closely the trend of conditions in the industry. During the early months of the year when employment was available for ships at fairly attractive profits, the number of new companies started and the amount of capital they involved was well above the returns for the closing quarters as shown in the tabular statement herewith. Throughout the year uncertainty as to government policy hampered development, a condition which prevailed even to the end of the year. The demoralization of ocean freight rates due to the collapse of international trade also was a controlling factor.

The average indicated investment per company during December figures out as \$1,210,938. This average compares with \$521,428 in November, \$3,650,000 in October, \$746,666 in September, \$1,227,500 in August, and \$1,458,533 in July. For preceding months of the year the company average was as follows: June, \$2,607,575; May, \$909,469; April, \$8,128,864; March, \$2,945,237; February, \$1,963,530, and January, \$2,384,531. The average for the 237 concerns organized during the year is \$2,470,244.

The indicated investment in new shipping enterprise during these periods is shown below:

Aug.-Dec.'14	\$ 1,844,000	Year 1917...	271,503,000
Year 1915...	37,062,000	Year 1918...	120,353,000
Year 1916...	69,466,000	Year 1919...	323,613,000
Year 1920—			
January	\$76,905,000	August	24,550,000
February	88,880,000	September	6,720,000
March	61,850,000	October	36,500,000
April	178,885,000	November	8,850,000
May	31,088,000	December	19,375,000
June	86,050,000		
July	26,250,000	Total	\$585,448,000

MERCHANT MARINE ACT. In the Merchant Marine Act of June 5, 1920, known as the Jones law, which provided for the continuance of the United States Shipping Board and for shipping affairs in general there was a recognition of the principle of Subsidies to American shipping at least in part. In section 24 of this act limitations on the rates and other conditions of mail subsidies were removed leaving the matter of compensation to the United States Shipping Board and the Postmaster General within, however, the appropriations made by the Congress. In section 11 of the same act, it was provided there would be loaned to shipowners to build new ships an amount not to exceed \$25,000,000 a year for five years derived from funds from the sale of government-owned ships and receipts from their operation. Furthermore in section 7 provision was made for certain experimental steamship lines to be operated by the Shipping Board until it was shown that they could not be made self-supporting.

Section 23 permitted the earnings of American vessels to be exempted from excess profits taxes

up to one-third the cost of approved types of new ships to be built in American yards. Up to Dec. 31, 1920, 39 vessels, totalling 453,000 deadweight tons and representing a declared value of approximately \$75,000,000, were included under the provisions of the law. Of the total, 31 of 376,000 tons were ordered by the large oil companies.

Section 34 of the act sought to remove any restriction on the United States to impose discriminating duties against foreign ships, by terminating any articles in treaties or conventions and directed the President to give 90 days' notice of such action. President Wilson refused to issue such a proclamation or take steps toward the abrogation of existing commercial treaties on the ground that the Congress had no constitutional right to authorize or direct such a proclamation, consequently this section was ineffective during the year. A large part of the Merchant Marine Act dealt with ship mortgages, the purpose being to popularize shipping bonds by making a vessel mortgage prior to material-men's liens. Up to the end of 1920 the effects of this provision were not visible. See SHIPBUILDING.

SHIPPING BOARD, U. S. See SHIPBUILDING; SHIPPING.

SHIPWRECKS. See SAFETY AT SEA.

SHOES, SHOE INDUSTRY. See BOOTS AND SHOES.

SHOOTING. Frank S. Wright of Buffalo, N. Y., retained his title as national amateur champion at the Grand American Handicap Tournament held at Edgewater Park, Cleveland, Ohio. Oscar Hansen of Fremont, Neb., tied Wright at 197 targets out of a possible 200, but in the shoot-off Wright scored 25 as against Hansen's 23. The doubles championship went to P. H. O'Brien. Butte, Mont., while the woman title holder for the year was Mrs. Judd H. Bruff, Pittsburgh, Pa. C. G. Spencer, St. Louis, Mo., captured the American professional honors after a shoot-off with R. O. Heikes. Dayton, Ohio. The amateur championship of America at clay birds was won by J. Clark, Jr., Worcester, Mass.

The annual matches of the National Rifle Association were held at Camp Perry, Ohio. The winners in the principal events were: team match, U. S. Infantry; individual, Sergt. H. Whitaker, U. S. Infantry; team, pistols, U. S. Marines; individual, Sergt. J. M. Thomas, U. S. Marine Corps. See OLYMPIC GAMES.

SIAM. A monarchy of southeastern Asia, between 6° and 20° south latitude and 97° and 106° east longitude with an approximate length from north to south of 1200 miles and a breadth of 480 miles. Capital, Bangkok.

AREA AND POPULATION. Area about 195,000 square miles; population 1915-16, 8,819,686; estimated, 1918-19, 8,924,000. The population of Bangkok is estimated at 628,675, of whom about 200,000 are Chinese; population of the island of Puket, about 179,600.

PRODUCTION. Agriculture is in a primitive condition. [The chief product is rice. In the fiscal year ended March 31, 1919, the total area under rice cultivation was 13,491,067 rai (2½ rai = about 1 acre) and the yearly average for the preceding five years reached 13,326,313, whereas the total area under six other principal crops during the same year amounted to only 161,595 rai, which were distributed as follows: Cotton, 27,626 rai, average 31,840; tobacco, 54,114 rai, average 57,819; peas, 14,357 rai, average 20,467 rai; sesame, 5,628, maize, 38,786 rai, average 34,212 rai. Live stock, April 1, 1919, numbered 4,593,136 of which 2,108,072 were buffaloes. Mineral resources are varied, including tin, tungsten, wolfram, iron, coal, zinc, manganese, and antimony. Tin is exploited on the island of Puket.]

COMMERCE. The following information in respect to commerce, finance and communications was supplied by the United States Bureau of Foreign and Domestic Commerce at the end of 1920: The total value of the foreign trade of Siam, entered and declared with the customs at the port of Bangkok, for the fiscal year ended March 31, 1920, amounted to 315,740,033 ticals (\$116,823,812 gold), compared with 265,123,347 ticals (\$98,095,638) for the previous year. The imports of foreign goods were valued at 138,439,074 ticals (\$51,222,457), and the exports of native products at 177,300,959 ticals (\$65,601,355). The import figures exceeded those for 1918-19 by 35,347,157 ticals (\$13,078,448), and the aggregate values of the exports were higher than in 1918-19 by 15,269,529 ticals (\$5,649,726). While in most instances the increased trade figures were accounted for by enhanced values of the goods, attention may also be called to the fact that in 1919-20 the average equivalent of £1 was 11.28 ticals, compared with an average value of 13.02 ticals for the three previous years. The tical values have been converted into United States currency at \$0.37 to the tical. During the

Countries	Imports		Exports		1919-20
	1913-14	1918-19	1913-14	1918-19	
United States	\$ 1,066,171	\$ 2,475,104	\$ 3,331,023	\$ 55,450	\$ 156,823
Australia	68,857	170,476	109,854	807	15,666
Austria-Hungary	169,096	.....	.....	609,421	.....
Belgium	608,112	730	21,484	825,779	1,060,828
China	3,250,684	3,430,120	3,820,111	123,228	565,254
Cochin-China	311,838	406,707	340,862	40,609	235,359
Denmark	219,953	50,565	82,263	61,123	75,424
Dutch possessions	997,868	1,689,958	2,451,897	444,758	9,030,727
France	565,428	231,720	144,004	155,604	1,105,301
Germany	2,458,889	.....	13,257	2,747,266	.....
Hongkong	5,375,366	7,137,777	13,431,689	13,771,592	16,597,726
India	3,451,617	3,946,707	5,614,753	725,451	909,386
Italy	304,055	28,751	15,350	176,180	111
Japan	777,339	4,486,909	2,265,627	220,097	5,070,628
Netherlands	523,033	211,052	196,130	3,080,019	970,995
Russia	9,104	.....	122	8,959	.....
Singapore	5,741,655	5,598,561	10,703,127	16,580,756	28,612,887
Switzerland	237,029	94,674	235,307	2,901	.....
United Kingdom	7,238,206	7,812,467	8,770,379	2,151,860	512,471
All other countries	218,070	376,731	666,218	1,015,713	1,092,871
Total	\$83,591,870	\$98,144,009	\$51,222,457	\$42,742,523	\$59,951,629
					\$65,601,355

year the local bank rate of exchange ranged from about 34 to 42 of United States gold cents to the silver tical, whereas in the pre-war period the usual value of the tical was 37 cents. According to declared values at the port of Bangkok, the share of each country in Siam's foreign trade for the fiscal years 1918-19 and 1919-20, as contrasted with the pre-war fiscal year ending March 31, 1914, is shown in the table on page 627.

Siam is one of the three or more great rice exporting countries of the world. Exports of rice from the kingdom usually reach well over 1,000,000 tons a year, but owing to the partial failure of the 1918-19 rice crop and to export prohibition, the total exports for 1919-20 were reduced to about one-half this quantity amounting to only 740,453 piculs (493,963 short tons), compared with 14,201,434 piculs (946,762 tons) in 1918-19, and a yearly average of 17,982,240 piculs (1,198,816 tons) for the preceding five years. However owing to enormously advanced prices the total declared value of the rice exports for 1919-20 reached 123,082,698 ticals (\$45,640,598 gold), against 132,096,385 ticals (\$48,975,662) in the previous year.

COMMUNICATIONS. Vessels cleared at the port of Bangkok in 1919-20 number 639 of 581,230 tons, as compared with 826 of 683,102 tons in 1918-19. Of the ships entered in 1919-20, 240 were British; 175 Siamese; and only three were under the American flag. In the official railway report for the year ending March 31, 1919, the length of all the Siamese state railways was given as 2,376 kilometers (1 kilometer=0.621 mile), of which 2,215 kilometers were open for traffic. The working account for this period showed considerable progress on all the lines of the state railways. It was planned to link up the northern and southern state railway systems of the kingdom by a short railway to cross the Menam Chao Phya river on a bridge to be constructed a short distance above Bangkok. The work on the extension of the Korat line to Ubon was progressing satisfactorily. During May, 1920, the railhead of the northern line of the state railways reached Chiangmai, the northern Siamese capital.

FINANCE. According to official reports the budget estimates of the kingdom for the fiscal year ending March 31, 1921, were as follows: Ordinary revenue 72,500,000 ticals (\$26,825,000), ordinary expenditure 82,130,126 ticals (\$30,388,147), leaving a deficit of 9,630,126 ticals (\$3,563,147). The estimates for expenditures to be met from other sources than current revenue amounted to 15,963,025 ticals (\$5,906,319), of which 6,816,225 ticals (\$2,522,003) were to be drawn from the treasury reserve fund, 8,290,000 ticals (\$3,067,300) from loans, and 856,800 ticals (\$317,016) from the loan sinking fund. As compared with the previous year the ordinary revenue was gazetted less by 3,600,000 ticals (\$1,332,000), while ordinary expenditures were exceeded by 6,173,278 ticals (\$2,284,113).

GOVERNMENT. Executive power is in the king (nominally hereditary but designates his successor) who is advised by a cabinet consisting of the heads of departments. There is a legislative council of 40 members including the members of the cabinet, but royal assent to legislation is required. King in 1920, Rama VI (Chao Fa Maha Vajiravudh).

SIBERIA. The northern Asiatic part of Russia. Area, 4,831,882 square miles with a population estimated January 1, 1915 at 10,377,900 (later estimates placed it at 10,510,200). Chief cities: Irkutsk (population, 129,700); Tomsk (116,664); and Vladivostok (91,464). Nearly 70 per cent of the inhabitants are settled in the agricultural regions of western Siberia. The resources are rich, but have not been developed. Gold fields have recently been discovered in the government of Yeniseisk and in the basins of the Amur, Obi and Lena rivers. The men engaged in mining numbered about 50,000. The great Trans-Siberian railway begun in 1891 establishes communication between western Europe and the Pacific coast, and divides into two branches at Stretesk, one extending to Port Arthur and Peking and the other to Vladivostok. Another branch was under construction along the river Amur. See JAPAN.

SIDGWICK, ARTHUR. British scholar and naturalist, died at Oxford, about October 1st. He was born April 9, 1840, and was the brother of the philosopher, Henry Sidgwick; then studied at Rugby and graduated at Trinity College, Cambridge, where he won high honors and was elected a fellow. He taught for 15 years at Rugby and became lecturer and tutor at Oxford where his lectures on the Greek tragedies drew large audiences. He was a strong and able supporter of the Liberal party, being for 25 years president of the Oxford City Liberal Association. He prepared a number of text-books, including annotated classics of authors, and he published a few educational essays. For 30 years preceding his death he was a conspicuous figure in Oxford circles.

SIERRA LEONE. A British colony and protectorate on the west coast of Africa, having Liberia on the east and French Guinea on the north. Area of the colony, about 4,000 square miles; population (1911) 75,572, of whom 702 were whites. The chief town, Freetown, had a population (1911) of 34,090. Area of protectorate 27,000 square miles; population (1911) 1,327,560. The chief exports were: Palm oil, palm kernels, cola nuts, piassava, and ginger. Chief imports were: Cotton manufactures, coal, tobacco, and spirits. Statistics for trade and finance for 1916 to 1919 inclusive were as follows:

	1916	1917	1918	1919
	£	£	£	£
Imports	1,290,817	1,332,752	1,680,386	2,123,344
Exports	1,233,544	1,497,995	1,516,871	2,101,569
Revenue ...	551,106	546,449	583,159	748,779
Expenditure ..	532,940	512,844	544,011	740,383
Shipping* ..	1,553,812	1,526,640	1,736,247	.....

* Tonnage entered and cleared.

SILESIA. The name of a former division of the Austro-Hungarian monarchy and also of a province of Prussia. The former was a crownland of Austria with an area of 1,988 square miles and a population, Dec. 31, 1910, 756,949. After the late war it became a part of the new republic of Czecho-Slovakia, (q.v.) The Prussian province of Silesia is the largest division of Prussia, the area being 15,573 square miles and the population (1910), 5,225,962. The question of the ultimate possession of Upper Silesia was one that agitated the Peace Conference and continued to disturb international politics throughout the year. It was to be settled by

plebiscite early in 1912. The area of Upper Silesia subject to plebiscite was 3,230 square miles with a population of 1,931,240 according to the estimates based on the census of 1910. See WAR OF THE NATIONS.

SILK. The silk industry in 1920 possessed special interest for the economist as it was one of the first to feel the effects of the general after war deflation. Furthermore it is a world industry in the sense that production, while widely distributed, that is in Asia and Europe, depends in a large measure upon distant markets, especially in America. Silk always responds to world-wide influences, to special or local conditions, as for example in the Far East or in America, and finally there are the special factors peculiar to the industry itself. These last are readily apparent and centre in the main on the fact that silk is a natural product dependent greatly on favorable natural conditions, and on the fact that it is universally a luxury which is bound to suffer by changes in the prosperity and purchasing power of a community. At the time of general inflation, which followed immediately after the war's conclusion, silk participated in the general advance of prices, affording opportunity for extensive speculation. For the conduct of active business at these enhanced values and in 1919 there was an active demand for silk and silk products, vast capital was required and as a result in the process of deflation that took place in 1920, with a general curtailment of credits, silk prices and the silk industry were particularly vulnerable. Throughout the world banking credits began to tighten, and with lack of capital liquidation was inevitable. With a decreased demand and a more general feeling of caution and economy on the part of the purchasing public, prices of raw silk began to fall and this tendency with but occasional rallies continued during the year. This is illustrated by the following résumé of the price fluctuations on the Yokohama market during 1920, made by H. L. Gwalter, a New York Silk Importer and authority.

	Double Extra	Extra	Kansai I.	Sin- shiu I.
Jan. 1.....	3530	....	....	3450
6.....	3600	3550	3520	3500
16.....	4060	4020	3970	3950
21.....	4470	4430	4370	4350
24.....		(Slump on Bourse)		
28.....	4400	4330	4270	4250
Feb. 5.....	4000	3950	3910	3890
Mar. 2.....	3700	3650	3570	3550
15.....		(Bourse breaks to 3100)		
17.....	3450	3390	3320	3270
29.....	3600	....	....	3410
April 8.....	3250	3220	3120	3100
17.....	3000	2925	....	2800
May 1.....	2600	2500	2050	....
3.....	2400	2200	1820	1800
24.....		(Several Japanese banks in trouble. Bourse closed.)		
May 26.....	2100	1970	....	....
31.....	1850	1700	1520	1500
June 7.....	1400	1500	....	1300
24.....	2000	1850	1550	New Silk
July 29.....	1350	1250	1120	1100
Aug. 12.....	....	1350	1240	....
Sept. 1.....	1370	1270	1140	1130
13.....		(Forming Imperial Syndicate)		
18.....	1700	1640	1580	1560
29.....	1630	1570	1520	1500
Oct. 9.....	1680	1610	1520	1500
		(Pegged minimum prices to end of year)		

Reading between the lines, in this case literally, of the above table, the disorganized conditions

of Japanese finances are revealed, and this is a subject far beyond the range of the present summary (See JAPAN). Furthermore it must be realized that speculation was as usual no less a feature of the Orient than the Occident and when coupled with disorganized finances it was unwholesome and unbalancing to the raw silk industry. From January prices declined until low points were marked at the end of July. Early in September silk traders, reelers and the Japanese Government agreed on the formation of a buying syndicate for the purpose of halting the continual decline and stabilizing prices on a minimum selling basis, until a normal export demand was established. This syndicate, which had available resources of some \$35,000,000, bought silk as offered at arbitrary prices to sustain the market for the balance of the season.

There was general stagnation in the Japanese raw silk market from October through the year. Buyers and sellers were waiting for a start on the part of the newly organized syndicate or Imperial Silk Company, which on October 9 announced that it had definitely fixed prices on the basis of 1,680 yen for double extra, 1,610 yen for extra, 1,520 yen for Kansai No. 1 and 1,500 yen for Sinshiu No. 1, at which these official quotations were maintained for the remainder of the year. On November 30, 1920, the Japanese reelers shut down their plants, stopping all production for a period of 78 days, and it was decided to keep closed the flatures of the SINSHIU district for an additional 35 days. In China also towards the end of the year the flatures shut down.

JAPANESE SILK TRADE. As a result of unfavorable conditions already referred to Japan's silk industry suffered an unfavorable year in 1920. The only substantial increases in silk exports occurred in floss silk, silk handkerchiefs and sundry silk fabrics. These gains, however, did not make good even one-tenth of the whole loss. The following figures show the value of all silk exports during 1919 and 1920:

Kinds of Silk	1919 Yen	1920 Yen	Decrease Yen
Waste silk....	18,868,964	17,758,826	1,112,138
Raw silk....	623,598,914	382,599,683	240,999,231
Floss silk....	7,643,746	8,562,258	*818,512
Habutai....	97,831,427	85,607,112	12,764,315
Crepes....	24,765,369	22,137,909	2,627,460
Sundry silk fabrics....	15,411,456	32,073,978	*16,662,522
Silk handker- chiefs....	7,195,891	8,087,243	*891,352
* Increase.			

For the decrease in waste silk all buyers were responsible except Italy, whose purchase amounted to 2,158,784 yen, compared with 1,729,394 yen in 1919. In 1920 Great Britain and Argentina purchased more actively in the habutai trade, but the decrease in shipments to the United States and France was too heavy to be offset. The export of crepes showed gains only in shipments to Australia and Argentina. The decline was especially marked in shipments to Canada. Shipments of silk handkerchiefs to Argentina and other countries, however, offset the decrease in exports of that item to Europe and the United States.

A classification of the Japanese raw silk trade of 1920 according to the importing countries and a comparison with 1919 follow:

Countries	1919 Yen	1920 Yen	Decrease Yen
Great Britain.	2,326,026	2,172,517	153,509
France	17,157,285	37,097,186	*19,939,951
Un. States....	600,843,287	333,595,922	267,247,315
Australia	40,326	268,426	*228,100
Other countries	2,232,000	8,465,632	*6,233,542
* Increase.			

THE 1920 RAW SILK CROP. The world's raw silk crop of 1920 and its distribution were estimated as follows:

	1920 Kilos	1919 Kilos	1918 Kilos
Europe			
Italy	2,250,000	1,835,000	2,695,000
France	260,000	180,000	245,000
Spain	70,000	70,000	75,000
Austria-Hungary..	120,000	150,000	150,000
Total	2,700,000	2,235,000	3,165,000
Levant and Asia			
Minor	1,040,000	1,040,000	1,040,000
Asia			
Japan	12,790,000	15,150,000	14,655,000
China	5,000,000	5,550,000	4,885,000
Canton	2,250,000	3,170,000	1,680,000
India, etc.	120,000	145,000	115,000
Total	23,900,000	27,290,000	25,540,000
(1 Kilogram=2.2046 lbs.)			

Accordingly with a substantial crop for 1920 as shown above and a reduced demand at the end of the year foreign markets, while still unsettled, were able to supply American manufacturers. Italy's crop increased approximately 37 per cent. over the previous year, and was returning to ante-bellum conditions of production. Furthermore on account of the reduced value of the lira in world exchange high prices prevailed. The summer cocoon crop in Japan showed a decrease of 14.3 per cent. over the summer crop of 1919, but the autumn crop was better, with only a 5.8 per cent decrease over the autumn, 1919, crop. The Canton crop was estimated at about 20,000 bales short of the 1919 crop, and the Shanghai crop was practically normal. The Tussah crop for the year was poor.

RAW SILK IMPORTS INTO THE UNITED STATES. The total importation of raw silk into the United States for the fiscal year, July 1, 1919, to June 30, 1920, amounted to 47,133,713 pounds, against 34,202,672 pounds in 1918-19, showing an increase of 37 per cent. over the previous year. These figures when compared with those of previous years show the extraordinary growth of the American Silk Industry which of course has to depend entirely on imported raw material. Earlier figures follow:

Season	Pounds	Season	Pounds
1905-1906...	14,505,324	1915-1916...	33,070,902
1908-1909...	23,333,750	1919-1920...	47,133,713

The imports of 1919-20 classified as to the countries of origin are given below:

From	Pounds
Italy	2,863,000
France	38,000
Japan	33,361,000
China	10,780,000
Other countries	91,000
Total	47,133,713

In this period the imports from Japan increased some 17 per cent. and those from China doubled over the previous year. Considering the United States importation of 1919-20, with the

world's crop of 1919, estimated at 60,000,000 pounds, it is realized that the United States consumed more than 78 per cent of the total raw silk production of the world.

But the record imports of 1919-20 could not be maintained in view of the conditions prevailing in the year 1920, and the falling off of imports into the United States may be gained from the following tabulation, comprising the first three quarters of the calendar year 1920.

	1920 Pounds	1919 Pounds
Third Quarter		
Italy		4,345
Japan	41,382	76,365
China	5,513	25,794
Total	46,895	106,504
Second Quarter		
Italy	327,553	22,650
Japan	5,457,480	9,280,608
China	2,142,803	2,343,034
Total	7,927,836	11,646,292
First Quarter		
Italy	669,782	
Japan	7,936,937	4,479,830
China	2,382,536	506,206
Total	10,993,255	4,986,036

RAW SILK PRICES AT NEW YORK. The following table depicts the price movement as revealed in the quotations for two important grades of raw silk on the New York market during the year, at the end of the months specified:

	Jap. dble. ex. A	Kan. I
January	\$18.00	\$17.50
February	15.00	14.50
March	14.50	13.40
April	10.70	9.80
May	7.80	6.50
June	8.00	6.65
July	5.90	4.75
August	5.75	4.85
September	7.05	6.45
October	6.80	6.10
November	6.40	5.90
December	6.20	5.75

These prices naturally reflected conditions in the East as well as in America, though at times they were as much as 50 cents lower in New York than in Yokohama. Production of American mills was curtailed during the year and purchases towards the winter were merely to supply immediate needs. The manufactured products were in slight demand and at prices where there was often a loss in manufacture even at the prevailing prices of raw silk. However New York stocks declined and in the principal warehouses on December 1 were reduced to 48,357 bales from 67,824 bales on February 1, and were composed of 333 bales of Italian silk, 36,965 bales of Japan silk and 11,059 bales of China and Canton silks. Early in the year stocks had shown 2,182 bales of Italian silk and 54,504 bales of Japan silk.

In the latter part of the year American silk manufacturers were interested in the proposed revision of the tariff and united to urge increased duties of manufactured goods in order to maintain the different rates of labor. It was argued that in 1920 the imports of broad silk from Japan into the United States amounted to some \$43,000,000 out of total imports of \$50,000,000. These Japanese imports had increased in six years from \$3,000,000 and Japan with its cheap labor and proximity to raw material was becoming

an important competitor as its mills were installing modern power looms.

In view of the speculation in the raw silk industry it was proposed during the year that an American Raw Silk Exchange should be established at New York and the matter was seriously debated. While it was held that such an agency might promote speculation yet it was argued that it would make a free world market closely connected with other Silk centres so that there would be general rather than special trade conditions.

For new mill construction. See TEXTILE MANUFACTURING.

SILVER. The following preliminary figures for silver production in the United States in the calendar year 1920 were supplied by the United States Bureau of the Mint and the Geological Survey:

State or Territory	Silver Fine Ounces	Value*
Alaska	792,751	\$804,745
Alabama	5	5
Arizona	6,098,251	6,190,518
California	1,513,495	1,536,394
Colorado	5,572,407	5,656,718
Georgia	140	142
Idaho	7,531,258	7,645,201
Illinois	8,500	8,629
Michigan	510,601	518,326
Missouri	123,219	125,083
Montana	13,583,164	13,788,677
Nevada	7,392,689	7,504,540
New Mexico	764,586	776,154
North Carolina	11	11
Oregon	182,558	185,320
South Carolina	0	0
South Dakota	84,851	85,627
Tennessee	112,595	114,299
Texas	524,212	532,143
Utah	11,564,155	11,739,121
Washington	188,487	186,218
Wyoming	72	78
Philippines	21,917	22,249
Porto Rico	135	137
Total	56,564,504	\$57,420,325

Compared with 1919 the figures show a reduction in output of 117,941 ounces.

* Silver valued at \$1.01513 per fine ounce being the average price based on the New York market Jan. 1 to 17, and \$1.00 per fine ounce thereafter. By the terms of the Pittman Act and Mint regulations the domestic silver produced and reduced in the United States subsequent to Jan. 17th is salable to the Director of the Mint at \$1.00 per fine ounce.

It is almost axiomatic that at a time of unsettled world economic and political conditions, silver is more or less an important feature in the general consideration. This, of course, follows from the fact that silver not only enters into the arts and commerce generally as a commodity, but for a large part of the world, embracing millions of people in the Orient, it is a measure of value so that its fluctuations have a vast meaning and relation to the prosperity of many peoples and nations. Therefore, when the accompanying table of monthly average prices of silver is studied showing after a high price of \$1.37½ or above coinage parity on Nov. 25, 1919, on 1920 there was a variation from \$1.32827 in January to \$.64774 in December, the significance can be appreciated. In London bar silver ended the year at 40½d., which was only 2d. more than its lowest for the year, recorded on December 10. Foreign silver was quoted in New York on December 31, at 64¼ cents, which was 5 cents more than the low for the year, recorded on December 10. The highest for the year 1920

was 89½d., recorded on February 11, in London, and \$1.37½ for foreign silver in New York, on January 11.

MONTHLY AVERAGE PRICE OF SILVER

Engineering and Mining Journal

Month	1918	1919	1920	1918	1919	1920
Jan..	88.702	101.125	132.827	44.356	48.438	79.846
Feb..	85.716	101.125	131.295	42.792	48.027	85.005
March	88.082	101.125	125.551	43.260	48.171	74.194
April..	95.346	101.125	119.779	47.215	48.886	68.848
May..	99.505	107.135	102.585	48.980	52.104	60.010
June..	99.500	110.430	90.957	48.875	53.896	51.096
July..	99.625	106.394	91.971	48.813	54.133	53.736
Aug..	100.292	111.370	96.168	49.077	58.835	59.875
Sept..	101.125	114.540	93.675	49.500	61.668	59.476
Oct..	101.125	119.192	83.480	49.500	64.049	54.197
Nov..	101.125	127.924	77.734	48.969	70.065	50.952
Dec..	101.125	131.976	64.774	48.492	76.432	41.845
Year	96.772	111.122	100.900	47.516	57.059	61.590

New York Quotations cents per ounce troy, 999 fine silver: London pence per ounce sterling silver, 925 fine.

WORLD'S PRODUCTION OF SILVER

1901-1920

	Fine Ounces		Fine Ounces
1901.....	173,011,283	1911.....	226,192,923
1902.....	162,763,483	1912.....	224,310,654
1903.....	167,689,322	1913.....	223,907,845
1904.....	164,195,266	1914.....	168,452,942
1905.....	172,317,688	1915.....	184,204,745
1906.....	165,054,497	1916.....	168,843,000
1907.....	184,206,984	1917.....	174,187,800
1908.....	208,131,404	1918.....	198,168,408
1909.....	212,149,023	1919.....	174,517,414
1910.....	221,715,763	1920.....	159,000,000*

* Estimated.

Beginning with December, 1920, the Treasury of the United States began to release standard silver dollars for export to China, and up to March, 1920, a total of \$13,000,000 of silver had been shipped to the Orient. The Pittman act of 1918 (See YEAR BOOK for 1919, article *Silver*) was in effect and purchases of domestic silver to take the place of silver dollars destroyed were begun in May at the rate of \$1.00 per ounce 1000 fine. By November 30, approximately \$26,500,000 had been purchased under the Pittman Act, monthly purchasing averaging 4,000,000 ounces. There had been \$208,900,000 ounces in the silver dollars broken up, so if the price of silver was not to be above \$1.00 and domestic production was to remain constant it would require some three and a half years to make up the quota. These purchases were of course advantageous to American silver mines, but this price fixing did not stabilize the world price of silver or prevent its eventual collapse.

The silver situation is bound to depend in large measure upon the demands of India and China as to these countries goes the greater part of the annual production. China had sold to India in the years 1914 to 1917 silver estimated to aggregate some 77,000,000 standard ounces, thereby depleting her own supply and requiring up to the end of 1920 considerable amounts until a state of apparent saturation was reached. In 1920 in place of the normal favorable balance of trade for India which was met by the importation of gold and silver, there was an unfavorable trade balance and there were sold in India so-called Reverse Council Bills drawn on London against the gold standard reserve which had been accumulated from the profits of the rupee coinage. These bills from Jan. 1, 1920 to Dec. 1,

1920, were said to total £55,000,000. Referring to the table showing the monthly price of silver for 1918, 1919, and 1920 it will appear that there was in this period a rapid though gradual rise to a maximum early in 1920 followed by an even sharper decline. For this rise the increasing demands for Indian currency and the purchase of bullion by the British government for India account were of course largely responsible but there were also as contributing causes the great excess of merchandise exports from Bombay, Calcutta, and other eastern ports, the large disbursements on account of military activities in India, Egypt, Mesopotamia and Palestine, and finally the embargo on silver imports on private account. If such causes explained the use of silver, its fall could be quite as readily accounted for. Bullion purchases on government account ceased in 1919 and there was an unfavorable balance of trade against India in the last six months of 1920. Paper money was substituted for the silver rupee. There was an unfavorable monsoon or lack of rain in India, and a serious famine in five important provinces of China. Early in the year the Japanese silk market had collapsed and there was rapid and enforced deflation throughout the East generally. So that all in all the Orient suffered from limited resources and low prices with a dull and decreased export trade.

The table shows that the world's silver production in 1920 declined from that of the previous year. This was due to decreased outputs in most of the producing fields, with an exception, perhaps, in the case of Mexico, but late in the year that country succumbed to falling prices and by the second week in December many properties were closed down and there were over 60,000 miners out of employment. As compared with 174,517,414 fine ounces in 1919, in 1920 according to the estimates of the *Engineering and Mining Journal* (New York) the output of silver was 159,000,000 fine ounces distributed as below:

	Ounces
United States	50,000,000
Mexico	56,000,000
Canada	13,000,000
South America, Central America and West Indies	17,000,000
Europe	5,000,000
Australia	8,000,000
Asia and Africa	10,000,000
Total	159,000,000

The same authority gives the distribution of the year's production increased by 27,000,000 ounces of melted coin silver received in the London bullion market from Continental Europe as follows:

DISTRIBUTION OF SILVER PRODUCED IN 1920

	Ounces
United States consumption in the arts..	23,000,000
United States Mint purchases under the Pittman Act	30,000,000
Mexican government purchases	9,500,000
English consumption in the arts	4,000,000
English mint—for medals	2,000,000
Shipments to India from England	14,000,000
Shipments to India from United States..	200,000
Shipments to China and the Far East from United States	70,000,000
Shipments to China and the Far East from England	18,000,000

	Ounces
United States Mint purchases for subsidiary coinage and other buyers, distribution unknown	15,300,000
Total	186,000,000

Exports of fine bullion from the principal shipping ports of North America during the past 12 months are approximately as below:

SILVER EXPORTS DURING 1920	
	Ounces
New York to England	5,000,000
New York to India	200,000
San Francisco to China, including Hongkong	62,900,000
San Francisco to Japan	4,600,000
San Francisco to French East Indies	2,100,000
Halifax to England	3,800,000
Vancouver to China and Far East	4,400,000
Total	83,000,000

In value silver imports for the year 1920 totaled \$88,100,000 as against \$89,400,000 in 1919. Exports of silver were valued at \$113,600,000 as compared with \$239,000,000 in 1919. (See ALASKA).

SIMMONS COLLEGE. A non-sectarian institution for the education of women, at Boston, Mass., founded in 1899. There were 218 students enrolled for the summer session, and 1278 for the regular fall session. The members of the faculty numbered 67. The productive funds of the institution amounted to \$2,384,098. The income for the year was \$283,573. There were 32,813 volumes in the library. Three years of a language required instead of two years. "Free margin" subjects are to be accepted with certain limitations. No conditions allowed. An addition to the endowment fund was being sought. President, Henry Lefamour, Ph.D., LL.D.

SIMMONS COLLEGE. An institution of the higher learning at Abilene, Texas, founded in 1891. There were 335 students enrolled in the summer session, and 701 in the regular fall session. The faculty numbered 33. There were 7,000 volumes in the library. President, Jefferson D. Sandefer, LL.D.

SINGAPORE. See STRAITS SETTLEMENTS.

SINN FEIN. See GREAT BRITAIN, *History*.

SKATING. The chief skating event of the the year 1920 was the contest between Oscar Mathiesen of Christiania, Norway, and Robert McLean, of Chicago, U. S., for the world's professional speed championship. The various races were held at Christiania, Mathiesen being victorious in three of the four events. The world's indoor professional title was won by Norval Baptise, Bathgate, North Dakota.

Everett McGowan, St. Paul, Minn., carried off the laurels in the international amateur championships held at Lake Placid, N. Y. He won the 880-yard, 1-mile, 2-mile, and 3-mile events. Rose Johnson, Chicago, proved the best of the women skaters and had the satisfaction of establishing a new world's record of 1 minute, 50 seconds for 880 yards.

SLAVIC. See PHILOLOGY.

SLAVONIA. See CROATIA AND SLAVONIA.

SLEEPING SICKNESS. See ENCEPHALITIS, EPIDEMIC.

SMITH, C WENHAM. American organist and composer. died in Newark, N. J., September 6. He was born in London, Dec. 25, 1851. He came to America in 1872 as organist at St. Patrick's

Cathedral in Newark. From 1892 he was organist at the First Presbyterian Church and the Temple B'nai Jeshuran. His compositions include two masses, many anthems, part-songs, and pieces for organ and piano.

SMITH, FRANK SULLIVAN. Lawyer, died in New York, November 15. He was known especially as a railway lawyer and had held important receiverships. He was born at Granger, N. Y. in 1851; graduated at Yale college in 1872 and went into the practice of the law in New York. After 1902 he was president of the State Board of Law Examiners. He was the director of several important concerns and was receiver of the Pittsburgh, Shawmut and Northern Railroad Company.

SMITH, GEORGE McLEOD. Managing editor of the New York Tribune, died in New York City, November 22. His newspaper activities extended over a period of thirty years. He was born at Orange, N. J., in July, 1869, and in 1900 became the managing editor of the Philadelphia Press. Two years later he was night editor of the New York Sun and in 1912 became managing editor of the Evening Sun. He became managing editor of the New York Tribune in October, 1919.

SMITH, ISAAC GREGORY. British clergyman and author, died, January 19. He was born at Manchester, Nov. 21, 1826, and educated at Rugby and Trinity College, Oxford. He was for a long time rector of Great Shefford, and was Bampton lecturer in 1873. His publications include: *Faith and Philosophy; Aristotelianism, Modern Thought; History of Christian Monasticism; The Athanasian Creed; What Is Truth?; On Assent to Creeds; Thoughts on Education*, etc.

SMITH, JAMES ALLWOOD. Consul-general, died, October 2. He was born at Grand Rapids, Mich., Nov. 3, 1865, and educated at Williston Seminary, Easthampton, Mass. He became manager of large marble interests in Vermont in 1891. From 1897 to 1907 he was American consul at Leghorn, Italy. He was then consul-general in the Congo Free State and at Genoa, Italy, and after September, 1913, he was consul-general at Calcutta, India. In politics he was a Republican.

SMITH, VINCENT ARTHUR. British historian of India, died at Oxford, February 6. He was born in 1848 and entered the Indian civil service in 1869, holding various administrative offices and becoming a district judge in 1895. In 1898 he was appointed a commissioner and his service was spent in the middle region of Northern India. His studies of contemporary life and of Indian antiquities were profound and his books on India were highly valued by experts.

SMITH, WATSON. British chemist and writer on chemistry, died, May 1. He was born at Stroud, England, Jan. 16, 1845, and educated at Owens College, Manchester and at German universities. From 1881 to 1915 he was editor of the *Journal of the Society of Chemical Industry*. For 10 years he was engaged in industrial chemistry as manager and chemist. He was professor of applied chemistry at University College, London. He made a number of important discoveries in chemistry and wrote extensively for the chemical journals.

SMITH COLLEGE. A non-sectarian institution for the higher education of women, Northampton, Mass., founded in 1871. The enrollment for the summer session of 1920 was 70; that for

the regular fall session was 1940. There were 231 members in the faculty. The endowment fund amounted to \$3,290,000 and the income amounted to \$531,389 for the year. The library contained 83,200 volumes. President, William Allan Neilson, Ph.D., LL.D.

SMITHSONIAN INSTITUTION. Founded in 1846 by act of Congress. This Institution is the result of the bequest of James Smithson of England who left his property to the United States of America "to found at Washington an establishment for the increase and diffusion of knowledge among men." A Board of Regents composed of the Vice-President, the Chief Justice of the United States, 3 members of the Senate, 3 members of the House of Representatives, and 6 other persons outside of those offices to conduct the business of the Institution.

The Secretary's report for the year ending June 30, 1920, shows the total permanent fund was \$1,082,896.02. Income for the year amounted to \$171,788.35, which added to the cash available on July 1, 1919, made the total resources for the year \$173,911.13.

Geological field work in the Canadian Rocky Mountains was continued by the secretary during the field season of 1919, with the following objects in view: (1) the discovery of an unmetamorphosed, undisturbed section of the Upper Cambrian formations north of the Canadian Pacific Railway; and (2) the collection of fossils to determine the various formations and to correlate them with the Upper Cambrian formations elsewhere. Special attention was given to the glaciers of which there are many fine examples in the region. Beautiful photographs of some of these were obtained, one showing a complete glacier from its névé to its foot. Two short field trips were taken during the year by Dr. R. S. Bassler, curator of paleontology, for the purpose of securing certain specimens of fossils and rocks required for the Museum exhibition series. The Collins-Garner French Congo Expedition was returned to this country early in 1919. Mr. C. R. W. Aschmeier collected and turned over to the Museum some 2500 mammals, birds, reptiles, fishes, and invertebrates. The Smithsonian African Expedition sailed on July 16, 1919, for Cape Town. One shipment of material was received by the end of the year consisting of 239 mammals and birds from South Africa. The Australian Expedition under Mr. Charles M. Hoy sent one shipment during the year consisting of 240 mammals, 228 birds. Dr. Ales Hrdlicka made an extended trip to the Far East in the interest of his researches on the origin of the American Indian and the peopling of Eastern Asia. Mr. Emery C. Leonard was sent with Dr. W. L. Abbott to Haiti on his last visit of exploration in that country from February to July, 1920. A collection aggregating 10,000 specimens was secured by Mr. Leonard in several characteristic regions. This material will prove of exceptional value and interest from the fact that little botanical collecting is being done in Haiti, the Flora is in consequence very imperfectly known. Dr. A. S. Hitchcock, custodian of the section of grasses in the National Museum, conducted a botanical expedition to British Guiana. The botanical results were very satisfactory, about 1200 members of plants being collected. Especial attention was given to the grasses, of which 171 species are now known in the colony. Mr. Paul C. Standley spent 10

weeks on a botanical expedition in the Glacier National Park, Montana. About 4000 specimens, representing over 900 species of plants were obtained. Mr. William R. Maxon conducted a botanical exploration in Jamaica where 10,000 specimens were collected. The exploration in Santo Domingo conducted by Dr. W. L. Abbott was conducted with very satisfactory results.

The Institution and its branches issued during the year 95 volumes and separate pamphlets. Of these various publications there were distributed a total of 143,290 copies. The Smithsonian library received during the year 6995 volumes and pamphlets. Continued use of the library's collection of works on aeronautics has been made by students both of the United States and of foreign countries. Forty titles were added to the collection during the year.

NATIONAL MUSEUM. In June, 1920, a small congressional appropriation made possible the establishment of the National Gallery of Art as an independent bureau under the administration of the Smithsonian Institution. During the past year the Museum acquired a total of 216,871 specimens, classified as follows: Anthropology, 15,254; zoölogy, 101,554; botany, 35,211; geology and mineralogy, 22,400; paleontology, 400,000; division of textiles, 1716; mineral technology, 627; mechanical technology, 97; and National Gallery of Art, 12. Four hundred and ninety-five lots of material were sent to the Museum for examination and report by members of the staff, and 4306 duplicate specimens were distributed for educational purposes. A collection of objects relating to the World War, made possible through the coöperation of the War and Navy Departments has taken up a large amount of space in the Museum. This collection has proved to be very interesting.

The number of packages handled during the year by the International Exchange Service was 369,372, an increase of 98,512 packages over the preceding year.

NATIONAL ZÖOLOGICAL PARK. Total number of animals in the collection at the close of the year was 1427, representing 419 species. Of this total, 496 were mammals, 847 birds, and 84 reptiles. This number is 124 under the record year, nevertheless, the monetary and scientific value of the collection is much greater than ever before. Especially interesting among the animals added during the year were a number of accessions from South America.

The sundry civil act for 1921 carries an appropriation of \$80,000 for the purchase of a frontage of 625 feet on Connecticut Avenue, Washington, D. C., which is adjacent to the park.

The work of the Astrophysical observatory at Washington consisted largely of tabulating and reducing the results of the observations made at Mount Wilson in 1919. A new instrument for measuring nocturnal radiation, devised by Messrs. Abbott and Aldrich and constructed at the observatory instrument shop was successfully tried during the year.

SNOW, ALPHEUS HENRY. Writer on law, died, August 19. He was born at Claremont, N. H., in 1859, and studied at Trinity College, Conn., and at Yale, graduating at the latter in 1879. Having studied law, he was admitted to the bar at Hartford, Conn., where he practiced from 1883-7. After practicing at Indianapolis for several years he devoted himself to literary

work and resided at Washington, D. C. He lectured on colonial government at the George Washington University in 1908 and 1909. He was delegate to the international conferences at The Hague in 1910. He wrote the *Administration of Dependencies* (1902); *The Question of Aborigines in the Law and Practice of Nations* (1919).

SNOW REMOVAL. See **ROADS AND PAVEMENTS.**

SOCCKER. See **FOOTBALL.**

SOCIAL ECONOMICS. See **CHILD LABOR; HOUSING; LABOR LEGISLATION; OLD AGE PENSIONS; STRIKES AND LOCKOUTS, etc.; also LITERATURE, AMERICAN AND ENGLISH.**

SOCIAL HYGIENE. For a survey of recent progress. See article in 1919 **YEAR BOOK.** In the year ending June 30, 1920, according to the United States Interdepartmental Social Hygiene Board, 46 States had adopted programmes of prevention, treatment, and control of venereal diseases as promulgated by the Secretary of the Treasury. During the year 326,000 cases of venereal diseases were reported to the State commissioners of health and 126,000 cases were treated in clinics operated under the programme laid out by the Secretary of the Treasury. Informational programmes were carried out in each of these 46 States carrying facts to the public through lectures, posters, pamphlets, moving-picture films, lantern slides, and other graphic media. With the result that probably the main facts connected with the hygiene of the venereal diseases became better known to the American public than ever before. Regulations and ordinances for the protection of the public and for the prevention of these diseases were adopted to a greater or lesser extent in each of these 46 States in 1919 and 1920. On June 30, 1920, there were 35 researches being carried on in 22 of the best American medical schools and universities in a scientific search for better methods in the prevention and treatment of the venereal diseases.

SOCIAL INSURANCE. Owing to the fact that a large number of legislatures did not meet during 1920 very little social insurance legislation was enacted. However, the Federal government passed a law regarding employers' liability on the high seas. The article provides that if death is caused by a wrongful act, neglect, or default on the high seas the personal representatives of the deceased may within two years sue the vessel or person who would have been liable if death had not resulted, and in such actions the doctrine of comparative negligence is substituted for contributory negligence. This law went into effect June 5, 1920. State legislation was enacted in only one state.

MISSISSIPPI. The act of March 27, 1920, provided that "Heirs of a person killed by the wrongful act or default of a ship or vessel may recover in all cases in which the person injured would have been entitled to recover damages if not killed by the injury."

MOTHERS' PENSIONS. Forty out of 48 states have now adopted some form of mothers' pension, according to facts made public in the *Annual Report* of the Chief of the Children's Bureau of the United States Department of Labor. They have recognized the principle that children should not be taken from their mothers

because of poverty alone. The rapid extension of the Mothers' Pension movement indicates the general belief of the country in the paramount value of home life and a mother's care. However, although large grants have been made in many of our States, the amounts in general are far too small. The increased cost of living has not been met and the full purpose of the laws is not attained. Some of the States are making careful studies of increased cost so that allowances may respond to the higher prices. The systems of administration vary widely in the different States. So also do the amount of the allowances and the methods of supervision. The Children's Bureau has pointed the necessity of making a careful investigation of the methods in use in all the States so that the country may be given the benefit of all the experience which has been gained through the operation of these laws.

MASSACHUSETTS. A commission was appointed to investigate the question of prenatal and postnatal aid and care for mothers and their children. This law was enacted Sept. 2, 1920.

SOCIALISM. **THE INTERNATIONAL.** The First International founded by Karl Marx and his followers in 1862, disappeared soon after the war of 1870. The Second International was created in 1889. During the late war it was split as a result of the nationalist attitude of the Socialists in the various countries, but its headquarters were still maintained at Brussels. The parties that broke away from this Second International included Socialists in Italy, France, Norway, and the United States. The Third International formed at Moscow in 1919 was based on the principle of class warfare and the dictatorship of the proletariat through a Soviet government and was under the control of Lenin and Trotsky. At the beginning of 1920, many moderate Socialist leaders were concerned with the reconstruction of the Second International. The years of war had divided the Socialist ranks into widely divergent Right and Left wings and the parties of the Left had become extremely radical. Many of the latter had already joined the Third International including groups in Italy, Norway, Serbia, Roumania, Sweden, Denmark, Bulgaria, Germany, Holland, Hungary, Jugo-Slavia, Spain, Switzerland, England and America. The attitude of the national groups is briefly indicated in paragraphs below on the respective countries.

THE SECOND INTERNATIONAL: GENEVA CONGRESS. A congress of the Second International was held at Geneva in August, 1920, in an effort to reconcile and reunite the working class movement throughout Europe and was attended by a score of different nationalities including Great Britain, Germany, Belgium, Sweden, Denmark and Holland and representatives of minorities in France and Switzerland. Great indignation had been expressed by Belgian and French Socialists against the German Socialist Democratic party for its support of its government in the war. These delegates insisting on raising the question of war guilt, the question was referred to committee and after several addresses had been made the German delegates made a confession of their failure and expressed their regret. A resolution was passed condemning war and calling for the immediate reconstruction of the bankrupt coun-

tries; demanding government intervention in the control of the import of foodstuffs and raw materials on behalf of the ruined nations; condemning imperialism, militarism and the forcible repression of subject races striving for self-determination. Another resolution definitely repudiated any dictatorship and all violence, and declared that the party stood for complete democracy, parliamentary government, and universal suffrage. The aims of true Socialism were defined in contrast to those of Bolshevism. It was proposed that an increasingly important part be played in coöperation with parliament by trade unions and professional unions voluntarily formed. Practical proposals for the administration of industries and services were made in a programme of Socialization. The changes were to be made gradually and without confiscation, the principle of compensation for expropriated owners being laid down. The plan for socialization involved the management of each national industry by a threefold national board representing the mass of workers, the managing and technical class, and the consumers and community as a whole. Comparatively few industries were to be nationalized, but a larger number might be controlled by municipalities or other local authorities. The voluntary consumer's coöperative societies were recognized as part of the organization of the socialistic commonwealth. According to the congress, labor included not only industrial manual work but also intellectual and agricultural work; in short the wage-earners, the intellectual workers, the independent handicraftsmen and peasants and all who personally coöperate in the production of utilities. Only those who idly live by owning were thus excluded from the laboring class. Here the decisions of the congress were in accord with those of the British Labor party two years before. Recognition of that party was shown also by the attribution to it of the task of negotiating with the elements not represented at Geneva in the hope of bringing them into harmony. Mr. Arthur Henderson was elected president, and Mr. J. H. Thomas treasurer. A new international executive of nine members, Mr. J. Ramsey MacDonald chairman, was to meet regularly at London, which, instead of Brussels, was for the time being at least to be the seat of the International Socialist Bureau. The main acts of the Geneva congress may be summed up as follows: It declared emphatically against the acts and programme of Lenin and Soviet Russia, and it incorporated British features and principles; it even gave a Fabian cast to its practical programme.

THE THIRD INTERNATIONAL. Far more important in its immediate effects was the Third International at Moscow, expressing as it did the principles and aspirations of Bolshevism, but these are best shown in the accounts of the various countries where the chief interest of the year was in the division between the moderate and radical groups upon the issue of Moscow leadership. From the first there was much dissension among Socialists in each country and at the close of the year when the twenty-one conditions laid down by Lenin for membership in the Russian International had been submitted and the replies of fifteen nations had been received there was evidence of wide differences among the countries themselves and between the groups within them. On the whole

although the anti-Bolshevist Socialists were still very numerous the year was marked by the increase of the extreme factions under Moscow influence.

GERMANY. A congress of the Majority Socialists was held at Cassel and a separate congress of the Independents was held at Halle, both in the autumn. At the congress of Cassel the attacks on the Treaty and especially on France were unusually bitter. The fundamental revision of the Treaty was demanded and the cruelty of the reparations was denounced. Appeal was made to the workmen of all the Allied countries to come to the aid of the workmen of Germany.

At the meeting of the Independents at Halle in October, the congress pronounced in favor of the adherence of that party to the Third International at Moscow, after hearing delegates from the Russian Soviet government. The division in the party on this issue amounted to an actual disruption. On the one hand was the wing that favored the Soviet government and pledged itself to the dictatorship of the proletariat in alliance with the Third International. On the other hand was the more moderate element which while calling itself revolutionary was opposed to Moscow. On October 16, the question of adherence to the Third International was decided in the affirmative by a vote of 237 to 156, and this was followed by the election of Adolf Hoffman, leader of the radical wing, as president of the party. The minority left the hall, but the communist majority continued in session. It went on with plans for concerting with Moscow a world revolution and for a general strike. The minority went into separate session and formed plans for communication with the revolutionary forces in all countries opposed to the Bolsheviks and for the preparation of a campaign against Bolshevik methods. They passed a resolution of sympathy with Bolshevik aims but expressed their opposition to the Bolshevik policy of destruction and terrorism. This split in the Socialist party was welcomed by the more conservative elements as lessening the danger of radical policies. The Independent Socialists in the previous election had polled nearly 6,000,000 votes although the party did not include more than about 900,000 paying members. The Communist element throughout Germany was numerically strong and was especially active in Berlin where a large mass meeting was held on October 17. See GERMANY.

FRANCE. On October 2, the French Federation of Labor in its Congress at Orleans adopted by a majority vote a resolution insisting anew upon its policy of complete independence. It proposed immediate action for the control of industry and commerce by the workingman, recommended a vigorous campaign for the nationalization of essential industries and appealed to the International Federation of Labor to join with it in the accomplishment of social change. Furthermore it affirmed its solidarity with revolutionary Russia, and demanded that agitation should be carried on until the Soviet republic should possess entire liberty of action and govern Russia in accordance with its own wishes. In general the parties that favored immediate action were defeated and the general sense was that the attack on society should be postponed until the

right moment. The Unified Socialist Party sent two delegates to the Third International at Moscow who made their report in the autumn. In the congress of Strasburg, February 25-28 the French Socialists decided that the principles set forth by the Moscow International did not contradict the essential principles of socialism and the congress accepted the idea of the dictatorship of the proletariat, though it did not favor affiliation with the Moscow body. But voted for the creation of an independent organization. Lenin had laid down the definite principles of proletarian dictatorship in his discussion with the French delegates and pointed out that their opinion did not conform to his own. Lenin argued that it was the most advanced element in the proletariat which became the state itself over against the bourgeoisie and over against the less advanced part of the working class. This conception seemed to require definite revolutionary action. Lenin, however did not demand of the French that they should at once revolt. It was for them to decide upon the proper moment but the important thing was to prepare for it.

The French delegates, after this exchange of views declared in the name of the French socialists that the party in France would remain faithful to Socialist principles and insist upon expropriation, the confiscation of the great landed properties and the socialization of the means of production. M. Marcel Cachin said: In short no revolutionary Socialist can refuse to accept expropriation as the aim of working class efforts, nor can he refuse to admit as a means to this end the employment of force with all the consequences that may follow including above all the dictatorship of the élite of the proletariat. The question of adherence to the Third International was the main subject before the Socialist congress at Tours during the last week in December. The extremists led by M. Marcel Cachin advocated it as the only means of satisfying the demand of the working class. The moderates as represented by M. Faure and others opposed it, pointing out that the course taken by the radicals had disorganized the Socialist parties in all countries and had aroused against them the peasant class, while at the same time it had provoked reaction among the people at large. In the speeches that were made, the extremists compared the Bolsheviks in Russia to the Abolitionists in the United States, when John Brown resisted the government at Harper's Ferry. A compromise measure was offered by the Centre, consisting of adherence in principle to Bolshevism without accepting the twenty-one points set forth by Lenin. They argued that the French Federation of Labor had lost a quarter of its members as a result of the failure of the railway strike which had been imposed upon it by the extremists. It was clear from the beginning that the radicals had the upper hand. Adherence to the Moscow International was promptly put to vote and carried by a large majority, namely 2,916 to 1,228. The attitude of the radicals was uncompromising. They held that if the social revolution were to succeed there must be perfect obedience to a central direction, and they wasted no time in argument, but proceeded directly to vote down their moderate opponents. In this congress the issue was clear, but at various other meetings of Socialists in

France the adherence to the Moscow International was more or less disguised under mere expressions of sympathy with the Soviet government or protests against the action of the capitalist governments against Russia.

After the congress of Tours, there was much lamentation among the moderates on account of the split in the party, but on the other hand it was pointed out by their opponents that the majority which had decided in favor of adherence to the Third International, consisted of two-thirds of the congress. The French socialist newspaper, *La Humanité*, for example, declared that it marked definitely the rupture with the old traditions of the Second International and with the humiliating routine of parliamentary socialism, which had practically resulted in nullifying Marxist principles. The conservative parties expressed great alarm over the situation declaring that the congress of Tours had been completely dominated by the Moscow government and had been also under the influence of a German woman delegate, Clara Zetkin, who had been a member of the secret meeting of Internationalists held March 25-26, 1915, at Berne, where it had been voted that the governments of the great nations should be held equally responsible for the war and that the peace should be won without annexations and without conquest. The conservative journals declared it significant that the same representative of Germany who had thus taken her country's part during the war should have won over the French Socialists to the Third International. They attributed it all to the machinations of the Germans.

ITALY. For an account of the labor movement toward the control of industry in Italy and the attitude of the extremists, see ITALY, paragraphs on *History*. As there noted, Italian Socialist delegates were sent to Moscow and brought back a report highly unfavorable to the revolutionist régime. Moreover, Lenin in ordering the expulsion from the Italian Socialist party of certain moderate leaders greatly offended a large moderate element among the Italian Socialists. There was a meeting of the Socialist party at Reggio Emilia in the first part of October which adopted resolutions on October 12, declaring that the use of violent or illegal means in class struggles should be only the last steps against the resistance of the capitalist element. While it did not condemn violent measures, it declared that such a revolution in Italy as corresponded to Russian Communist ideas would fail completely unless it were helped by the working classes of richer countries. At the same time it affirmed that if the occasion arose, the Italian Socialist party would avail itself of any means that offered for the conquest of political power. At the end of the year the Italian Socialists in convention rejected adherence to the Communist International at Moscow on the conditions imposed by Lenin. The minority withdrew and formed the Italian Communist party.

BELGIUM: CONGRESS OF THE LABOR PARTY. The Belgian Labor party congress was held at Brussels, December 11-12. The main subjects under discussion were those of discipline and the national languages. The Belgian Labor party has been solidly organized on the basis of existing trade unions and discipline has been rigorously maintained. The system rests on

the local federations of labor which are subordinate to a general council elected by the annual congress. The congress lays down the policy, but the general council carries it out. The chief power in the general council has been recently exercised by M. Vandervelde former president of the International and in 1920 minister of justice in the cabinet. If members of the Socialist or Labor party departed in any respect from the rulings of the party organization, they were called strictly to account. This had recently happened to several Socialist members of the government who had supported policies not acceptable to the official chiefs of the party. In 1920 the main object of the ruling element in the Socialist party was to checkmate the radicals. The majority were moderates and adhered to the Second International, while the minority was the party of revolution and supported the Third International. In 1920 about 80 per cent of the Labor party belonged to this group of moderate Socialists, while the extreme Socialists included only about 15 per cent of the Labor party. The extremists however carried on an active campaign. They had their own weekly paper entitled *The Exploited*, and they attacked constantly the acts of the majority. In 1920 they appeared to be gaining strength. The Brussels federation for example was almost entirely composed of them and the Antwerp federation was tinged with radicalism. Hence the importance from the point of view of the majority of repressing the radical movement. The Brussels congress adopted a severe resolution on this subject by a vote of 448,000 against 91,000 (37,000 not voting). This declared that the Socialist party must remain united. It then laid down its policies and declared that all members must submit to them. It disavowed the groups created by the minority and gave orders that they should be dissolved. The issue before the minority was either to accept this order and give up their programme, or to leave the party.

GREAT BRITAIN. The attitude of the labor groups in Great Britain is indicated by the following letter addressed by representatives of the British Labor party and the Trades Union Congress to the Communist and Socialist parties of the world:

"The great difficulty which confronts International Socialism is the division of the movement into two camps, as a result of the Russian Revolution of November, 1918. Bolshevism tried to establish, not only over Russia, but over every other country in the world, the method of seizing political power by armed force, holding that power by the same means, and changing the whole economic structure of society by decree and suppression. Since its first success in Russia it has somewhat modified its position, and at the present moment in this country it is informing its adherents that those who decry political methods are traitors to the cause of Communism, but that political action should be used solely to prove the abortiveness of the institutions which are to be captured. Obviously such a compromise with the unclean thing is bound to defeat itself, and will only make candidates who pursue such a policy ridiculous in the eyes of electors. It is political and revolutionary futility of the simplest kind.

"Obviously every Socialist who has any international instinct at all will see that an Inter-

national based upon Moscow principles can never represent more than the smallest and least influential fraction of the Socialist movement in the various countries. Moreover, the attempts made by Moscow to control national organizations, not only in general Socialist policy, but in the details of their own national work, must prevent every such organization with any self-respect and any sense of national freedom from putting itself under such a yoke.

"If, therefore, we ask for a united International upon a more liberal basis than that demanded by Moscow, we do so because we are convinced that Moscow possesses neither the breadth nor the stability to maintain an International. We ourselves desire to keep in the closest organic touch with our comrades in every other land. We desire to be represented at their conference, to consult with them, to help and be helped by them, but we must decline Moscow conditions and Moscow methods as the price of that co-operation."

See GREAT BRITAIN, *History*.

OTHER EUROPEAN COUNTRIES. In Spain the Bolshevik programme was favored in a Socialist congress in June, and definite adherence to the Lenin programme was accepted in September by the group headed by Marcellino Domingo. In Switzerland the executive committee of the Socialist party rejected allegiance to the Third International but the party itself split on that issue. In Norway a Socialist congress favored a Soviet revolution and programme, and adherence to the Third International, as did the extremists of the Socialist and labor parties in Sweden, but the Scandinavian Workers congress at Copenhagen voted against the Norwegian proposals by 385 to 15. In Austria the radical element at first accepted membership in the Third International but later broke off relations with Moscow. In the Baltic states a congress of the Social Democratic party at Riga, December 18-20, rejected adherence to Moscow.

THE UNITED STATES. The Communist party and the Communist Labor party in the United States declared their allegiance to the Moscow International. The Socialist party in a referendum on the subject decided by three to one to support it, but in doing so declared that it was not influenced so much by the tactics of that body as by the fact that it was making some progress against capitalism and therefore ought to be supported. The leaders of the Socialist party declared that the American Socialists would insist on being allowed to use their own judgment as to the methods of establishing a socialistic system in their own country and this attitude was affirmed at the International Socialist Party Convention in New York in May. At the end of the year the executive committee of the Socialists refused to recommend affiliation with Moscow, saying: "We concede to the Russian comrades the right to formulate their own internal policies without interference from any other section of the working-class movement of the world. What we concede to them we claim for ourselves. Every resolution adopted by our party implies or claims this right for the American movement."

On January 5th, the New York state legislature suspended five elected members, all Socialists from New York City, on the ground that they were affiliated with an anti-

governmental party and were guilty of treasonable speeches. They were Louis Waldman, and August Claessens of Manhattan, Samuel A. Dewitt and Samuel Orr of the Bronx and Charles Solomon of Kings County. Their trial began January 20 and closed, February 27. The charges, more specifically, as presented by the chairman of the judiciary committee were that the five assemblymen during the war had been pro-German and that they had allied themselves with a party which sought to overthrow the government by force. Against three of the Socialists evidence was presented for the purpose of showing that they had made treasonable and seditious speeches in public. Other evidence related to the official declarations of the party. The defense was conducted by the Socialist lawyer, Mr. Morris Hillquit, who declared that they were victims of persecution. The vote was taken on April 1, and stood at 116 to 28 against three of the accused and 104 to 40 against the other two. The majority report of the judiciary committee declared that the charges had been amply proved and that the accused were not obedient to the constitution and laws of the State or desirous of the welfare of the people or in sympathy with the government etc. The report said among other things that any party that acknowledged aliens in its membership should be excluded from the official ballot of the State. It was largely taken up with a condemnation of the Socialist party and its programme during the war. It especially condemned the party's control of its legislative members by a party oath. This affair aroused the widest comment all over the country and in both liberal and conservative quarters was violently attacked as an aggression on the rights of free speech and free opinion and as a departure from reasonable practice. Among those who protested against this action were Justice Charles E. Hughes and the Bar Association of the State of New York. They declared specifically that the method of procedure was unconstitutional and that the men should not be dismissed until the charges against them were proved. On September 21 the New York Assembly of the State of New York again faced the question. All five of the ejected members had been re-elected and this action on the part of their constituents was in large degree a protest against the course of the Assembly. On September 21 after a violent discussion, the Assembly voted to oust three of them, namely Waldman, Claessens and Solomon. The other two who were permitted to remain tendered their resignations at hearing of the expulsion of their colleagues. As to the Socialist party in the Presidential election, see the article UNITED STATES. In Socialist quarters a great increase in their numbers had been predicted as a result of the repressive measures taken by the government and especially of the course followed by the legislature of New York. As to the national vote, this prediction was not fulfilled. According to the estimates of the Secretary of the Socialist National Committee in December, the total vote for the country was between 930,000 and 960,000 and might, when missing votes were counted, extend to 1,000,000. Whereas it had been predicted that the number would extend to 2,000,000. The Socialist party had done little more than hold its own in the

country at large. In New York however, the effect on the Albany policy and other measures to suppress Socialism was, so far as could be inferred from the results, greatly to strengthen the party. In New York State the Socialist candidate Debs received four times as many votes as the Socialist candidate Benson had received in 1916.

SOCIAL SERVICE. See CHARITIES.

SOCIETY ISLANDS. See FRENCH ESTABLISHMENT IN OCEANIA.

SOCIOLOGY. See LITERATURE, ENGLISH AND AMERICAN; AND ANTHROPOLOGY.

SODIUM COMPOUNDS. The production, imports, and exports of sodium compounds all increased in the United States in 1920 over 1919, according to figures compiled by the United States Geological Survey. The sales of all sodium compounds and of metallic sodium amounted to 9,886,020 tons, valued at \$139,336,338, an increase of about 8 per cent in quantity and 17 per cent in value.

SOILS. It is estimated that there are in round numbers 850,000,000 acres of land potentially available for cultivation in the United States, and that of this about 500,000,000 acres are now actually used in productive agriculture. The area not so utilized includes forests and cut-over, swamp, and arid lands, the reclamation of which is in most cases so expensive as to be of doubtful economy under present conditions. The immediate problem of most importance from the standpoint of increased production appears, therefore, to be better use of the lands already under cultivation. This means a more complete knowledge of the productive possibilities of soils such as is furnished by detailed soil surveys and studies of soil utilization.

The soil survey conducted by the Bureau of Soils of the United States Department of Agriculture, in coöperation with State agricultural colleges and experiment stations and State departments of agriculture and geological surveys, supplies to a large extent this necessary information as regards the soils of the United States. This survey now covers 1,064,019 square miles, or one-third of the area of the continental United States. During the past year 67 areas located in 31 States and covering a total of 29,784 square miles, or 19,061,760 acres, was surveyed in detail, and 11,825 square miles, or 7,568,000 acres (in Texas) was covered by reconnaissance surveys.

There is constantly increasing demand for the information these surveys furnish from investigators, extension workers, teachers of agriculture, and those engaged in the settlement of new lands. The peculiar characteristics of different types of soil must be taken into account in land settlement, and in all work involved in the improvement and increased production of cultivated crops. The development of agricultural instruction in schools is also creating a large demand for the specific knowledge of soils and of general agricultural conditions furnished by the surveys. The Chief of the Bureau of Soils in his report for the year ended June 30, 1920, states that there has been no determination in detail of the various factors of soil fertility or productiveness and no land classification based primarily on soil characteristics because of the lack, until within recent years, of systematically accumulated data for an area sufficiently large to make this possible. The soil survey, how-

ever, has now covered the Eastern, Central and a large part of the far Western United States in sufficient detail to supply in large measure the necessary data for this purpose. The work of the survey has progressed to a stage justifying the preparation of a general soil map of the United States, and such a map is expected to be completed within another year. In some States the surveying of soils is already nearly completed, making possible the preparation of maps showing fully the soil resources of these States.

It is claimed that "no other nation has undertaken at any time so detailed and at the same time so comprehensive a study of its soils as is now being carried on in the United States." The current information as to similar work in other countries is very meagre and is such as to indicate that the pre-war work along this line has either not been resumed or is being continued to a rather limited extent.

The vital importance of a closer study of the productive capacity of soils is leading many scientific investigators to reexamine the fundamental basis of soil science and to study more minutely the many essential factors of soil fertility. These investigations have dealt especially with (1) the possible deficiency in soils of other essential constituents besides nitrogen, phosphoric acid, and potash, notably lime and sulphur; (2) the relation of the soil solution to plant nutrition; and (3) the biological and biochemical conditions essential to plant growth.

The Bureau of Soils is giving particular attention to the study of the chemical composition of the virgin soils of the United States as well as to the large-scale extraction of soils to determine the actual crystalline form of certain of the soil constituents. This work has shown "that the salts occurring in the soil solution are much more complex than had been realized and that the salts in the soil mixture are of the same general type as those in the Stassfurt deposits of Germany and in the beds of former inland seas and lakes that have evaporated and left their salts as deposits." It also appears that these complex salts vary somewhat in different soil types.

Recent investigations have confirmed earlier conclusions that both lime and sulphur are essential elements of plant food frequently deficient in soils. Leguminous crops especially are benefited by applications of sulphur on many soils. The sulphur fertilizers that have been used with good results include pulverized sulphur, superphosphate, and gypsum and other sulphates. Sulphur causes an increase of soil acidity unless used with liberal applications of lime.

The complex problem of soil acidity and its correction continues to receive much attention. It appears to be established that compounds of aluminum are frequently the determining factor in acidity of sandy loams and the lighter silt loams as well as in swamp soils. It has been found that acid soils are unfavorable to the growth of certain organisms which destroy toxic compounds in soils, thus indicating that the correction of soil acidity may not always have the direct beneficial effect expected. It appears that the beneficial effect of liming on otherwise fertile soils may be due not so much to correction of acidity as to the making of favorable conditions for soil organisms, especially the legume organisms.

Investigations relating to soil nitrogen have

shown that continuous cropping with alfalfa increases the nitrogen content of semi-arid soils (where the rainfall is less than 20 inches). Nitrogen fixation appears to be correlated with the reaction of the soil, but as a rule is not influenced by the total amount of nitrogen present. There is evidence to show that while all uncropped soils steadily and persistently lose nitrogen in the form of nitrates, soils which have a relatively high nitrifying power lose this power very slowly and regain it readily under proper treatment. Further evidence has been obtained of loss of nitrogen from soils as a result of cultivation and excessive aëration.

Recent studies of the movement of soil moisture indicate that there is a direct relation between the moisture equivalent of soils and the mechanical composition: that is, that the moisture equivalent is an index of the proportion of different kinds of soil particles present.

Further studies on alkali soils have shown an antagonism between calcium and iron salts and a number of the common alkali salts as measured by ammonification and nitrification. Calcium sulphate has been found to generally increase the solubility of soil constituents, a fact which is of special importance in case of alkali soils.

It has been shown that in certain arid and semi-arid soils micro-organisms penetrate deeply into the soil, indicating that there is bacterial activity at considerable depths in such soils. A significant fact brought out by recent investigation is that well manured fertile soils and most of the common organic manures contain certain water-soluble growth-promoting substances which are apparently derivatives of nucleic acid. This is a step in the direction of the final determination of the identity of these substances, which appear to be of great importance in crop production and have a certain analogy to vitamins in animal nutrition.

SOMALI COAST. See FRENCH SOMALI COAST.

SOMALILAND, ITALIAN. See ITALIAN SOMALILAND.

SOMALILAND PROTECTORATE. A British protectorate comprising the Somali coast on the Gulf of Aden. Area, about 68,000 square miles; population about 300,000 mostly Mohammedans. The largest towns are Berbera with a population of about 30,000; Bulhara (7,300); and Zeyla (7,000). Live stock is the main source of wealth. Imports in 1919-20 were £503,213; exports, £231,011. The budget for 1919-20 was as follows: Revenue £81,870; expenditure £322,989. The governor and commander-in-chief in 1920 was Sir Geoffrey Archer. In January the attacks of the Mullah were repulsed and on January 21 his camp at Medisho was destroyed by an air raid. He was subsequently pursued by the British forces and in the early part of February it was reported that the power of the dervishes had been destroyed.

SONZOGNO, EDOARDO. Famous Italian music-publisher, died in Milan, March 14. He was born in 1836. It was he that instituted, in 1880, the competition in which the prize was awarded to Mascagni's *Cavalleria Rusticana*. Since then the house has maintained its prestige as the most formidable rival of the Ricordis. He was also proprietor and editor of the influential periodical. *Il Secolo*. He retired from active work in 1915.

SONZOGNO, LORENZO. Head of the famous Italian music-publishing house, died in Milan, April 2. He was a nephew of Edoardo, and born in 1877. In 1915 he succeeded his uncle as head of the firm.

SOUTH, UNIVERSITY OF THE. A Protestant Episcopal educational institution, at Sewanee, Tenn., founded in 1857. The enrollment for the year 1920 was 213 for the regular fall session, and 14 for the summer session. There were 27 members in the faculty of which six were new men. The productive funds of the institution amounted to \$1,018,774 and the income for the year was \$250,846. There were 38,897 volumes in the library. A new dormitory and inn were under construction. President, Rt. Rev. Albion W. Knight, D.D.

SOUTH AFRICA, UNION OF. A British dependency constituted by the South African Act of September, 1909, as a legislative union, comprising provinces of Cape of Good Hope, Natal, the Transvaal and the Orange Free State. Area, 473,096; population (1911) 5,973,394; white population May 4, 1918, 1,418,070. Capital, Cape Town, with a population in 1918 of 90,348; largest city Johannesburg (135,639). (For further details, see preceding YEAR BOOKS). In 1919 the movement of population was as follows: Births, 39,891; deaths, 17,601; marriages, 13,488. In the same year the emigrants numbered 24,784 and the immigrants 27,106. The persons naturalized in 1919 numbered 224 of whom 147 came from Russia, that country having supplied the largest proportion of foreigners naturalized during several years past.

EDUCATION. The state schools and state-aided schools in 1919 numbered 7,749, of which 4,760 were for whites and 2,989 for colored pupils; the pupils numbered 514,955 of whom 294,161 were white and 220,794 colored; teachers numbered 19,698. The private schools in 1919 numbered 425 with 27,424 pupils and 1,558 teachers. Higher education in 1919 included 2,429 students and 125 professors.

AGRICULTURE. Although South Africa has surpassed all other countries in the production of diamonds and gold, yet farming actually remains the industry of the people and the industry that offers the largest scope for development. The aggregate value of the agriculture products of the Union already exceeds that of mining. Nearly all farms are large. Small holdings, except near the cities, are uncommon. In consequence, a large proportion of the land is uncultivated, and there still remain vast areas which have never been touched by the plow. As a rule, a large part of each farm is set aside as pasturage, and farming and cattle raising go hand in hand in nearly every instance. The principal crops are maize, wheat, oats, kaffir corn, rye, barley, tobacco, cotton, and forage. Tea is also produced to a limited extent in Natal; and the cultivation of sugar is confined almost entirely to that province. Maize is actually the leading crop, and, in fact, South Africa is now recognized in the principal markets of the world as one of the foremost fields for the production of maize of good quality. On account of favorable climate and suitable soil maize is produced almost throughout the Union. However, the maize belt is often defined as the country lying east of the 26th meridian, which may be traced by drawing a line between Algoa Bay, Bedford, Cathcart, Queenstown, Aliwal North, Wepener, and Bloemfontein, and thence north to Lichtenburg and Zeerust. The Trans-

vaal is the largest producing province of the Union, but the Orange Free State holds the record for growing the heaviest crop per square mile. The production of maize has increased considerably in recent years. Oats hold a more important place than wheat in local agriculture. However, oats are not always grown for grain, but instead find a ready market in the form of food for horses and cattle. As applied locally the term "kafir corn" includes both kafir corns and durras. The former are indigenous to South Africa, and comprise the original red and white varieties, as well as the varieties improved from seed obtained from the United States. The durras are of North African origin, and include brown, white, and yellow durra. They are both nonsaccharine sorghums. Kafir corn is not only important as a foodstuff for the native (colored) population, but it is also employed as a substitute for maize in feeding cattle. The principal forage crops are lucerne, toff grass, and manna. The first-named is the most important, and wherever water can be procured this plant flourishes in nearly every part of South Africa. Tobacco is grown in various parts of the Union of South Africa, but the principal producing areas are the Magaliesburg and Kat River districts. The available farm area of the Union is, roughly, 229,300,000 acres, of which only about 14,000,000 acres are under cultivation. In 1919, 990,000 acres were planted with wheat, 132,000 acres with barley, 675,000 acres with oats, 139,849 acres with rye, and 4,420,000 acres with corn. The yield from the wheat crop of 1919 was 5,967,300 bushels, against 10,100,000 bushels in 1918. As the normal consumption of wheat in the Union of South Africa is about 11,000,000 bushels, this left a deficit of a little over 5,000,000 bushels. The corn crop was estimated at 34,683,000 bushels, compared with the census returns for 1918 of 45,143,000 bushels. While this was sufficient to meet the domestic requirements, the surplus available for export was considerably reduced. Oats and barley also suffered severely from the drought and the yield was estimated at 4,336,200 bushels of oats and 1,037,800 bushels of barley, as compared with 10,744,000 bushels and 1,643,000 bushels, respectively, in 1918. For the first time in the history of the industry the sugar crop exceeded local requirements, the yield for the 1918-19 season being 152,000 tons, an increase of 48,000 tons over the previous year. It was estimated that the 1919-20 yield would be somewhere between 150,000 and 170,000 tons. The cultivation of tobacco in South Africa has recently made rapid strides, the tobacco-manufacturing companies now obtain the bulk of their raw material from domestic sources. The area under cultivation in the Union embraces about 24,000 acres, producing, during 1917-18, 14,931,000 pounds of tobacco, the largest yield ever obtained. Owing to adverse climatic conditions during 1919-20 the yield was estimated at only 10,500,000 pounds. At the close of 1919 there were over 2,500,000 orange and lemon trees in the country. There were also 2,172,000 apple trees, 1,162,000 apricot, 97,000 mango, 206,000 nectarine, 6,000,000 peach, 789,000 pear, 1,144,000 plum, and 2,400,000 other kinds of fruit trees. The greater part of the fruit-growing industry centres in the Cape Province, although during the past years rapid development has been taking place in the Transvaal. The production of wool is one of the most important industries in the Union of South

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Africa, and next to gold, wool provides the principal item of export. The number of woolled sheep now exceed 25,000,000, and the production of wool for 1918 was 124,336,200 pounds. The production for 1919 was estimated to be about the same as in 1918.

The estimates for the year 1920 were as follows: Area of wheat, 823,000 acres; barley, 91,000 acres; corn, 564,000 acres. Production of wheat, 8,649,000 bushels; barley, 1,292,000 bushels; corn, 45,812,000 bushels. See AGRICULTURE.

MINERAL PRODUCTION. The production of minerals for 1919 was valued at \$247,418,338, or \$17,624,484 more than in 1918, when the production was valued at \$229,793,854. The production of gold showed a decrease of 86,566 ounces over the previous year, but the output of silver, diamonds, and coal was slightly increased. The copper output suffered a further decline of nearly 2,000 tons over 1918, and about 15,000 tons over 1917.

The following is a detailed summary of the mineral output for South Africa for 1919:

Minerals	1919	
	Tons	Value
Gold	*8,331,651	\$172,228,498
Silver	*891,804	991,043
Diamonds	*2,592,099	54,688,647
Coal	10,261,859	16,698,852
Copper	4,904	1,016,622
Tin	1,629	1,388,829
Antimony	32	2,706
Arsenic, white	8	3,226
Asbestos	3,934	323,262
Corundum	179	7,232
Graphite	86	12,799
Iron ore	3,601	5,261
Mineral paints, iron oxide, ochers, etc.	240	2,784
Iron pyrites	5,532	48,238
Talc	757	10,560
Lead ore	756	24,201
Magnesite	1,024	13,251
Manganese ore	155	3,776
Mica	3	1,796
Lime .....	.....	.....
Soda	52	3,684
Tungsten	4	3,046
Flint .....	.....	.....
Gypsum .....	.....	.....
Total .....	.....	\$247,418,338
* Fine ounces. Carats.	.....	.....

In the diamond-mining industry, which, next to gold mining, is the most important of the mining industries in South Africa, the output was increased from 2,543,735 carats in 1918 to 2,592,099 carats in 1919, or 48,364 carats, although the value increased from \$33,876,008 in 1918 to \$54,688,647 in 1919, or nearly \$21,000,000.

COMMERCE. The total foreign trade for 1919 was the largest since the formation of the Union in 1910. This trade in 1919 was valued at \$672,942,373, as compared with \$575,198,034 for the year 1918, and \$532,671,000 for the pre-war year of 1913. In 1919 the exports, including raw gold, were valued at \$425,766,974, and the imports at \$247,175,399. The excess of exports over imports amounted to \$178,591,575. In 1918 the exports, including gold, amounted to \$334,368,731, and the imports, \$240,829,303, leaving a favorable balance of \$93,539,428. The values of the imports of merchandise (not including government stores) into and the exports from the Union of South Africa during 1918 and 1919 are shown by countries of origin and destination, respectively, in the following table:

Countries	Imports from		Exports to	
	1918	1919	1918	1919
British Empire				
United Kingdom	\$124,885,466	\$103,854,727	\$76,848,624	\$144,876,811
Aden			1,002,903	1,345,451
Australia	5,725,165	7,849,611	1,100,627	1,704,920
British East Africa	876,526	461,835	1,980,195	1,139,201
British West Africa	448,570	2,477	212,909	122,572
Canada	4,582,399	7,852,196	1,129,043	356,952
Ceylon	1,263,387	1,241,998	863,088	946,846
Egypt	51,100	98,804	1,165,979	4,422,989
Falkland Islands			60,026	256,985
India	16,817,929	12,426,816	433,889	516,676
Mauritius	841,963	104,630	1,237,887	1,715,655
New Zealand	2,248	16,803	147,844	198,621
Rhodesia	2,186,825	3,394,125	10,563,000	10,603,154
Southwest Africa	226,321	2,178,357	5,019,959	5,524,041
St. Helena	2,272	895	159,933	109,102
Straits Settlements	268,217	77,860	1,479,294	1,193,217
West Indies, British	252,153	51,098		
Zanzibar	1,438,951	678,205	464,663	862,082
Other British possessions	246,405	1,208,301	90,437	41,921
Total, British Empire	\$159,415,897	\$140,998,238	\$103,919,250	\$175,487,786
Foreign Countries				
United States	\$31,997,899	\$54,891,224	\$29,626,790	\$38,742,766
Argentina	3,086,170	778,231	1,384,282	1,062,578
Brazil	3,828,982	3,089,215	58,544	73,455
Chile	804,510	1,428,551	12,925	
Cuba	140,885	171,247		
China	499,118	866,944	822	6,010
Japan	12,961,528	8,537,145	13,848,840	18,393,487
Siam	50,685	325,690		
Belgium	21,130	104,328		5,944,128
Belgian Kongo	20,975	71,099	2,495,595	1,976,853
Denmark	93,888	88,157		
France	2,800,954	2,986,322	1,150,426	4,791,721
Madagascar	628,637	270,154	738,652	630,985
Germany	94,799	145,498		1,401,970
Greece	9,703	20,872	152,648	48,325
Italy	639,575	512,564	357,201	27,909
Netherlands	1,776,350	975,684		
Dutch East Indies	1,522,173	2,415,560	62,642	52,315
Norway	1,245,381	1,854,941		13,163
Portugal	332,669	263,798	87,548	144,121
Madeira	10,332	30,941	12,843	76,228
Portuguese East Africa	1,219,808	905,174	4,805,849	3,091,468
Portuguese West Africa	70,964	30,980	473,642	513,352
Russia	121,355	14,284		
Spain	447,888	260,231		
Sweden	4,718,485	4,169,520		
Switzerland	2,492,793	1,678,850		
Turkish Empire	58,802	104,474		138,320
All other countries	172,548	337,960	617,465	392,635
Total, foreign countries	\$71,243,497	\$86,329,578	\$55,881,664	\$77,522,269

COMMUNICATIONS. In 1913, 1539 steamers and 68 sailing vessels, a total of 1607, of a net register of 5,353,794 tons, entered South African harbors, and during that same year 1,510 steamers and 67 sailing vessels, or a total of 1,577, of 5,277,324 net tons register, were cleared. In 1919 only 998 steamers and 77 sailing vessels, a total of 1057 ships, with a net tonnage of 3,647,404 tons, entered South African ports, and 909 steamers and 101 sailing vessels, or a total of 1070, with a net tonnage of 3,585,629 tons, were cleared.

The mileage of the state railways at the close of 1919 was 9,542 miles. There were 496 miles of privately owned line over which the government operated trains, and which it intended soon to absorb into the State system. The railways of the Southwest Africa Protectorate, comprising 1,409 miles, are also operated by the railway administration of the Union government.

FINANCE. The budget's estimates for 1920-21 were as follows: Ordinary revenue, £28,381,000; ordinary expenditure, £34,421,000; loan account, £13,894,000. The figures for the public debt and sinking fund were as follows: External debt, £123,390,000; internal, £50,515,000; total (gross) debt, £173,905,000; sinking fund, £9,856,000; net debt, £164,049,000. The budget for 1919-20 in detail was given by the *Statesman's Year Book* as shown on opposite page.

GOVERNMENT. The executive power is in a governor-general appointed by the Crown, who acts through an executive council chosen by himself. The legislative power is in the parliament, consisting of the senate and the house of representatives, the senate having 40 members of whom 8 are nominated and 32 elected, 8 from each province, and the house having 130 members elected from the provinces under the laws existing at the time of the formation of the Union. The governor-general in 1920 was Prince Arthur of Connaught, appointed in 1920. The prime minister was General J. C. Smuts; and the other members of the executive council were as follows: Minister of Agriculture, Mines, and Education, F. S. Malan; Minister of Finance, Henry Burton; Minister of Justice, N. J. de Wet; Minister of Railways, Interior and Health, Sir Thomas Watt; Minister of Posts and Telegraphs, Sir J. A. C. Graaf; and Minister of Lands, Colonel H. Mentz.

HISTORY

ELECTIONS. The results of the elections of March 10 were announced in March, as follows: Nationalists (followers of General Hertzog), 43; South African party, 40; Unionists, 25; Labor, 21; Independents, 3. The speech from the throne after Parliament opened, March 19, outlined a national programme which was aimed at calm-

<i>Revenue</i>		<i>Expenditure</i>	
	£		£
Customs	5,010,000	Governor-General and Parliament	115,000
Excise	1,228,000	Ministerial Department of Prime Minister	
Posts, telegraphs and telephones	2,031,000	and Native affairs	358,355
Mining revenue	1,328,000	Ministerial Department of:	
Licenses	110,000	Defence	1,575,471
Stamp duties and fees	650,000	Mines and industries	290,020
Income tax, super tax, and dividend tax ..	4,050,000	Higher education	251,895
Estate and succession duty	240,000	Finance:	
Native poll tax		Treasury	46,351
Native hut tax	830,000	Public debt	6,940,388
Native pass and compound fees	40,000	Pensions	1,200,000
Land revenue	150,000	High Commissioner	47,978
Forest revenue	109,000	Provincial administrations	3,520,981
Rents on government property	104,000	Miscellaneous services	83,257
Interest	4,277,000	Inland revenue	70,588
Departmental receipts	400,000	Audit	62,315
Fines and forfeitures	200,000	Customs and Excise	174,862
Miscellaneous	87,000	Justice	3,208,839
		Interior	1,019,040
		Public works	614,442
		Agriculture	861,019
		Posts, telegraphs and telephones	2,144,748
		Lands	197,017
		Irrigation	166,550
		Special Incremental Pay	125,000
Total	20,629,000	Total	23,075,180

ing popular discontent in regard to the high cost of living. Specifically it included measures against profiteering, food speculation, and rack-renting; for housing and currency reforms; promotion of railway construction, land settlement, and irrigation; industrial improvement including the application of the Whitley system to South African industries and the introduction of measures in respect to fair wages and the working day. Progress had been made in the policy with regard to the natives and a plan was being carried out for the creation of a permanent native commission and of advisory councils to which natives were to be admitted.

THE SECESSION ISSUE. As a result of the elections no party had a clear majority over the other three. The prime minister, General Smuts, though supported loyally by the Unionists, on the constitutional issue, had not the necessary parliamentary basis for action. Vain attempts were made to combine his followers and those of General Hertzog, but the latter were not ready for any compromise, except upon the issue of a South African republic, and to this General Smuts was opposed. A conference at Bloemfontein in September having shown that they were irreconcilable, General Smuts issued a manifesto denouncing republicanism and calling for the creation of a new party that should stand for loyalty to the constitution, irrespective of race. The Unionists, under the leadership of Sir Thomas Smartt, accepted this programme. They voted to dissolve their own organization and join the South African party in a body. As pointed out in preceding YEAR BOOKS the Nationalist party under General Hertzog had steadily gamed ground. At first the party worked clandestinely, while outwardly loyal to the constitution, but latterly it had declared openly its intention of setting up a republic. In this the Nationalists promised to use only constitutional means but it was believed by their opponents that there was no chance of realizing their aims except by revolution. For a time in the summer of 1920 General Hertzog seemed willing to forego the demand for secession as an immediate issue in practical politics, but the pressure of the younger and more radical element as represented by such leaders as Mr. Tielman Roos in the Transvaal and Dr. Malan in Cape Province compelled him

to come out publicly for secession and he did so just before the final conference at Bloemfontein.

At the close of the year attention was fixed on the approaching elections, appointed for Feb. 8, 1921, at which the South African party's appeal for unity would be definitely submitted to the people. It was regarded as the most critical event in the recent history of the country. The parties in Parliament were almost evenly matched, the Nationalist and Labor vote about equalling that of the South African party and the Unionists. Some of the arguments advanced by General Smuts as the campaign approached were: That the secession of the Union as a whole would split the Union itself into parts, cause civil war between the Dutch and the English, and drive the natives to revolt for they preferred British rule to the Dutch; and that if a new Dutch state should come out of it, it would be impotent and isolated; furthermore that the status accorded to South Africa along with the other British dominions in the League of Nations implied the very recognition of independence for which the separatists contended.

SOUTH AMERICA. See under the various South American countries.

SOUTH AUSTRALIA. A state of the Australian commonwealth, occupying the central and southern part of the continent; bounded by the Northern Territory on the north, Western Australia on the west, and Queensland, New South Wales and Victoria on the east. Area, 380,070 square miles; population at the census of 1911, 408,558; estimated, June 30, 1919, at 448,075, exclusive of the men in the Australian Expeditionary Force who had not yet returned. The above figures do not include the aborigines who were placed at over 20,000. The capital and largest city is Adelaide with an estimated population in 1918, including suburbs, of 235,751. The principal crops are: Wheat, wine, barley, oats, and hay. In 1917-18 the crops were valued at £10,291,443. The estimates of quantity produced in 1918-19 were as follows: Wheat, 22,936,925 bushels; wine, 6,554,125 gallons; barley, 2,497,743 bushels; oats, 1,609,467 bushels; hay, 569,945 tons. Legislative power is in a legislative council and house of assembly, the former having 20 members and the latter 46. In the election of 1918, 256,724 were registered, of

whom 134,188 were women, the franchise to women having been granted in 1898. Executive authority is vested in the governor, appointed by the crown, who acts through a responsible ministry. Governor in 1920, Lt. Col. W. G. G. T. Weigall; Prime Minister, A. H. Beake. See AUSTRALIA.

SOUTH CAROLINA. POPULATION. According to the preliminary report of the census of 1920, there were 1,683,724 residents in the state, January 1, 1920, as compared with 1,515,400 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 192,864, an increase of 9.2 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	2,230,000	42,370,000	\$49,149,000
	1919	2,270,000	36,320,000	71,550,000
Oats	1920	484,000	10,416,000	10,728,000
	1919	510,000	11,730,000	12,903,000
Wheat	1920	160,000	1,760,000	4,488,000
	1919	185,000	1,942,000	5,010,000
Rye	1920	24,000	264,000	792,000
	1919	20,000	200,000	590,000
Tobacco	1920	103,000	*66,950,000	10,042,000
	1919	112,000	*80,864,000	18,487,000
Hay	1920	460,000	*462,000	11,466,000
	1919	490,000	*371,000	11,440,000
Peanuts	1920	36,000	1,620,000	3,484,000
	1919	20,000	900,000	2,628,000
Potatoes	1920	31,000	3,100,000	5,580,000
	1919	28,000	2,380,000	4,760,000
St Potatoes	1920	88,000	9,240,000	10,811,000
	1919	86,000	7,740,000	11,455,000
S'rg'm Sirup	1920	15,000	*1,500,000	1,500,000
	1919	12,000	*1,020,000	1,061,000
Cowpeas	1920	100,000	900,000	2,025,000
	1919	110,000	660,000	1,914,000
Cotton	1920	2,877,000	*1,580,000	110,925,000
	1919	2,835,000	*1,426,000	254,567,000

* Pounds. * Bales. * Tons. * Gallons.

FINANCE. Balance, Dec. 31, 1919, \$1,100,477; receipts during the fiscal year 1920, \$10,102,940; expenditures during fiscal year 1920, \$9,801,066; balance December 31, 1920, \$1,402,021. The principal of the funded debt, December 31, \$5,382,308.

LEGISLATION. Among the measures passed in the regular session of the legislature may be mentioned: Act to encourage the teaching of agriculture, industry, and domestic science in the public schools; better regulation of charitable and correctional institutions; creating drainage system and authorization of taxation and bond issues to that end; drivers of motor vehicles required to stop and render aid after striking people; children under twelve prohibited from driving motor vehicles; authorizing cities of 50,000 or more to acquire and operate port utilities and providing for the creation of a port utilities commission; placing steamboat lines and truck lines under the jurisdiction of the railroad commission; sanitary inspection and provision for the conduct of hotels and restaurants; provision for annual physical examination by physicians and dentists of children in the public schools; prohibiting teachers having tuberculosis or infectious diseases from teaching in the public schools; free tuition for ex-soldiers.

ELECTIONS. The vote in the presidential election of 1920 was: Cox (Democrat), 63,490; Harding (Republican), 2266; as compared with the following vote in the election of 1916: Wilson (Democrat), 61,837; Hughes (Republican), 1558. The vote for governor was: Cooper

(Democrat), 58,050; no opposition; and the vote for United States Senator was: Smith (Democrat), 63,151; no opposition.

SOUTH CAROLINA. UNIVERSITY OF. A non-sectarian, co-educational institution located at Columbia; founded in 1801. In 1920, there were 540 students enrolled. The faculty had 37 members. The university is supported by appropriations which amounted to \$211,515 and \$75,000 for buildings. \$25,000 was realized from sale of property. The library had 60,000 volumes. There were four new chairs added, namely: (1) Bible Chair; (2) Rural Social Science; (3) Hygiene and Sanitation; (4) Business Administration. A school of commerce was also established. President, W. S. Currell.

SOUTH DAKOTA. POPULATION. According to the preliminary report of the census of 1920, there were 636,547 residents in the State, January 1, 1920, as compared with 583,888 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 74,564, a falling off of 4.0 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture, covering the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	3,520,000	105,600,000	\$44,352,000
	1919	3,200,000	91,200,000	108,528,000
Oats	1920	2,219,000	75,446,000	24,897,000
	1919	1,850,000	53,650,000	33,800,000
Barley	1920	1,073,000	26,825,000	13,949,000
	1919	875,000	19,250,000	22,138,000
Wheat	1920	2,886,000	26,282,000	30,224,000
	1919	3,725,000	80,175,000	72,420,000
Flaxseed	1920	220,000	2,200,000	3,680,000
	1919	145,000	1,150,000	4,930,000
Rye	1920	320,000	4,320,000	4,709,000
	1919	500,000	6,500,000	8,125,000
Hay	1920	4,500,000	*5,670,000	52,507,000
	1919	4,440,000	*5,008,000	83,158,000
Potatoes	1920	84,000	8,904,000	8,637,000
	1919	90,000	4,500,000	8,550,000

* Tons.

MINERAL PRODUCTION. The production of gold from mines in South Dakota in 1920 was \$4,339,000, compared with \$4,862,536 in 1919 and with \$6,565,337 in 1918; that of silver was 68,035 ounces, compared with 115,522 ounces in 1919, according to preliminary estimates by the United States Geological Survey. Production in 1920 in the Black Hills district of South Dakota was confined almost exclusively to two mines, the Homestake and the Trojan. The Homestake produced gold amalgam bars and cyanide gold bars, and the Trojan produced silver-gold cyanide bars and a few lots of smelting ore. All the other gold properties were closed on account of the high costs of mining.

MANUFACTURES. Preliminary figures of the census of manufactures in the State in 1919, published by the United States Bureau of the census showed a consistent increase at the census of 1919 as compared with that of 1914. In the order of their importance from a percentage standpoint, the increases for the several items ranked as follows: Wages, 200.9 per cent; value by manufacture, 170.1 per cent; value of products, 158.6 per cent; cost of materials, 153.8 per cent; salaries, 149 per cent; capital, 112.1 per cent; proprietors and firm members, 85 per cent; wage earners, 68.6 per cent; number of establishments, 57.6 per cent; salaried employees, 56.3 per cent and primary horsepower, 37.4 per cent. The capital invested, as reported in 1919, showed a gain of \$16,885,000, or 112.1 per cent, over that

in 1914. The average capital per establishment was approximately \$23,000 in 1919 and \$17,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$26,270,000 or 153.8 per cent. The average cost of materials per establishment in 1919 was approximately \$31,000, and in 1914 \$19,000. The value of products in 1919 showed an increase over that in 1914 of \$38,281,000, or 158.6 per cent. The average per establishment in 1919 was approximately \$44,000 and in 1914 \$27,000. The value added by manufacture in 1919 showed an increase over that in 1914 of \$12,011,000, or 170.1 per cent. The value added by manufacture in 1919 formed 30.6 per cent of the total value of products and in 1914 29.2 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 448, or 56.3 per cent, while the average number of wage earners increased 2,597, or 68.6 per cent. A comparative summary for the State for 1914 and 1919 follows:

	Census—		Per cent. of increase, 1914-1919
	1919	1914	
Number of establishments.....	1,415	898	57.6
Persons engaged in manufactures.....	9,039	5,346	69.1
Proprietors and firm members.....	1,410	762	85.0
Salaried employees.....	1,244	796	56.3
Wage earners (average number).....	6,385	3,788	68.6
Primary horsepower.....	22,436	16,324	37.4
Capital.....	\$31,945,000	\$15,060,000	112.1
Services.....	9,987,000	3,463,000	188.4
Salaries.....	2,079,000	835,000	149.0
Wages.....	7,908,000	2,628,000	200.9
Materials.....	43,349,000	17,079,000	153.8
Value of products.....	62,420,000	24,139,000	158.6
Value added by manufacture (value of products less cost of materials).....	19,071,000	7,060,000	170.1

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 109,874; Cox (Democrat), 35,938; Christensen (Farmer-Labor and Non-Partisan), 34,406; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 64,217; Wilson (Democrat), 59,194; Socialist, 3760. The vote for Governor was: McMaster (Republican), 103,592; Bates (Non-Partisan), 48,426; Howes (Democrat), 31,870; and for United States Senator: Norbeck (Republican), 92,267; Ayres (Non-Partisan), 44,309; Cherry (Democrat), 36,833; Richards (Independent), 10,532.

OFFICERS. Governor, W. H. McMaster; Lieutenant-Governor, Carl Gunderson; Secretary of State, C. A. Burkhart; State Auditor, Jay E. Reeves; State Treasurer, W. S. O'Brien; Attorney General Byron S. Payne; Commissioner School and Public Lands, N. E. Knight; Supt. Public Instruction, Fred L. Shaw.

JUDICIARY. Supreme Court: Justices, James H. McCoy, Ellison G. Smith, Charles S. Whiting, Samuel C. Polley, J. H. Gates.

SOUTH DAKOTA, UNIVERSITY OF. A co-educational State institution at Vermilion, S. D., founded in 1882. The enrollment for the summer session of 1920 was 112; for the regular fall session it was 816. There were 84 members in the faculty, 12 being additions. The public land of 8600 acres at minimum sale was valued at \$10 per acre. The additional budget amounted to \$345,032. There were 45,000 volumes in the library. President, Robert L. Slagle.

SOUTH DAKOTA, STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS. A co-educational State institution at Brookings, S. D., founded in

1881. The enrollment for the summer session of 1920 was 163; for the regular fall session it was 877. There were 89 members in the faculty including two additions. The productive funds of the institution amounted to \$451,000, plus 138,000 acres of land. The income for the year was \$76,518. There were 24,000 volumes in the library and 8,000 pamphlets. The erection of one wing of the \$55,000 dormitory for wounded soldiers was nearly completed. This was to afford comfortable housing for the two hundred service men with disabilities who were receiving vocational rehabilitation training at this institution. An animal health laboratory valued at \$10,000 was nearly completed. Research work along many lines of veterinary science was projected. President, Dr. Willis E. Johnson.

SOUTHERN CALIFORNIA, UNIVERSITY OF. A Methodist-Episcopal, co-educational institution for the higher education at Los Angeles, Cal., founded in 1879. The enrollment for the fall of

1920 was 2010, and for the summer session, 718. The members of the faculty numbered 118. The income for the year was estimated at \$330,000. President, G. F. Bovard, D. D.

SOUTH GEORGIA. See FALKLAND ISLANDS, DEPENDENCIES OF.

SOUTH ORKNEY ISLANDS. See FALKLAND ISLANDS, DEPENDENCIES OF.

SOUTH SHETLAND ISLANDS. See FALKLAND ISLANDS, DEPENDENCIES OF.

SPAIN. A constitutional monarchy in southwestern Europe occupying the greater part of the Iberian peninsula and separated from France by the Pyrenees. Capital, Madrid.

AREA AND POPULATION. The total area is placed at 194,783 square miles, of which 19,005 are on the continent, the remainder comprising the Canary and Balearic Islands, and the Spanish possessions on the north and west coasts of Africa. Population estimated Jan. 1, 1919, at 20,719,598, compared with 19,950,817 in 1910. The largest cities with their population on Jan. 1, 1919, were: Madrid, 652,157; Barcelona, 618,766; Valencia, 245,162. Vital statistics according to the latest records were: Birth rate per 1000, 29.8; death rate, 22.1; marriage rate, 13. Total emigration in 1918 was 36,254 and had been chiefly to Argentina, Cuba, Brazil, Uruguay and Mexico. (See article IMMIGRATION.) No later figures for education were available than those given in preceding YEAR BOOKS.

AGRICULTURE. The information in this and succeeding paragraphs on production, commerce, finance, etc., was supplied by the United States Bureau of Foreign Commerce. The following are the estimates, in kilos (kilo=2.2 pounds), of the crop production for Spain for the year 1920:

Products	Kilos
Corn	695,410,000
Rice	284,810,000
Potatoes	2,851,155,100
Sugar beet	1,570,472,000
Sugar cane	72,789,000
Flax, in seed	1,308,300
Flax, in fiber	319,400
Hemp, in seed	3,406,200
Hemp, in fiber	7,899,600
Olives	1,350,060,300
Olive oil	263,259,100

In comparison with the crop of 1919, it may be noted that better yields were expected in the case of corn, flax, sugar beets, and potatoes, and less in the case of rice, olives, hemp, and sugar cane. The most important decrease to be noted is in the case of olives, namely, 463,039,500 kilos, with an equivalent of 73,134,600 kilos of olive oil. The total yield for 1919 was 1,796,810,800 kilos of olives, producing approximately 333,854,000 kilos of oil, which was only exceeded in 1911 and 1917.

Live stock in 1918, as shown by statistics subject to revision, included 576,889 horses, 1,049,471 mules, 916,328 asses, 3,173,577 bovine animals, 17,734,922 sheep, 3,685,808 goats, 4,106,791 pigs, and 400 camels, a total of 31,244,186 head. See AGRICULTURE.

MINERAL PRODUCTION. The total value of the mining and metallurgical products of Spain during 1918 was 1,387,097,669 pesetas, and in 1917, 1,363,242,958 pesetas, showing an increase of 23,854,711 pesetas in 1918. The value of ores at the pit amounted in 1918 to 545,916,704 pesetas, in 1917 to 488,464,290 pesetas; the value of the metals and mineral products from the smelting works amounted in 1918 to 841,180,965 pesetas, in 1917 to 874,778,668 pesetas. The value of ores rose greatly, but the quantities mined decreased after 1913, as shown by the following table of total quantities of minerals extracted during the years 1913 to 1918, inclusive (the 1918 figures are subject to revision):

	Metric tons
1913	61,703,689
1914	57,687,187
1915	41,209,081
1916	44,295,204
1917	44,478,041
1918	43,791,473

The output of the principal minerals during 1913, 1917, and 1918 was as follows:

Minerals	1913	1917	1918
	Metric tons	Metric tons	Metric tons
Iron	9,861,668	5,551,071	4,692,651
Soft coal	3,783,214	5,042,213	6,134,986
Copper*	2,268,691	1,901,841	1,007,707
Iron pyrites	926,913	376,918	590,008
Common salt ^b	60,429	781,106	320,531
Lignite	276,791	637,841	726,848
Lead	279,078	240,368	216,183
Anthracite coal	232,517	324,756	377,216
Zinc	117,831	123,846	106,958
Sulphur	62,653	84,979	72,360
Quicksilver	19,960	18,705	17,537
Manganese	21,594	57,474	77,714

Minerals	1913	1917	1918
	Metric tons	Metric tons	Metric tons
Silver-bearing lead	23,800	13,218	3,505
Other	600	780	700
Silver	402	96	962

* Includes copper ore and ferrocyanous pyrites.
^b Includes rock salt and products of salt works.

INDUSTRIAL DEVELOPMENT. In 1916 and 1917 many industrial joint-stock companies were formed by Spanish capital, and in 1919 such capital devoted to industrial enterprises was estimated at 700,000,000 pesetas. This movement in favor of nationalizing Spanish industry was fostered by the law of July, 1917, definitely constituting the Commission for the Protection of Industries. This policy favored Spanish industry in intensifying the manufacture of textiles, stimulating siderurgical production, and the exploitation of coal mines. Benefits were also realized in other industries.

COMMERCE. The total foreign commerce of Spain during the year 1919 amounted to 2,410,811,720 pesetas (1 peseta = \$0.193 at par), of which 1,087,641,451 pesetas represent the value of the imports and 1,323,170,269 pesetas the value of the exports. The commercial situation of this country, as compared with the latest pre-war year, was reversed. Spain, like the United States, changed from a debtor to a creditor nation, as the result of the war. In 1913 the total foreign commerce amounted to 2,387,424,721 pesetas, with the balance of trade against Spain by nearly 229,000,000 pesetas, whereas in 1919 the balance of trade was in favor of Spain by over 235,500,000 pesetas. Aside from the export and import of gold, silver, and tobacco, the balance of trade was in Spain's favor by more than 456,000,000 pesetas in 1919, while in 1913 it was against Spain by more than 247,000,000 pesetas. The values of Spain's imports and exports of general merchandise, gold, silver, and tobacco in the years 1913, 1918, and 1919 are shown in the table at bottom of this page.

According to the Trade Communications report in 1920 American exports to Spain increased 240 per cent from 1914 to 1919, from thirty million dollars in 1914 to one hundred and two million dollars in 1919. The displacement of Germany, and also, in some part, of England and France in the Spanish market largely explained this favorable American trade growth. The geographical position of the country and its great natural wealth made possible the supplying of war needs of the belligerents on an important scale. The total trade balance in favor of Spain from the beginning of the war to the close of 1919 was approximately 4,000,000,000 pesetas (\$772,000,000 at nominal par of exchange). This strengthened the financial situation in the country in a remarkable manner. It is a striking fact that Spain granted a credit to the United States of 250,000,000 pesetas, of which 155,000,000 were actually utilized.

COMMUNICATIONS. Although the shipping statistics of 1919 showed a slight gain in compari-

Articles	1918		1918		1919	
	Imports	Exports	Imports	Exports	Imports	Exports
	Pesetas	Pesetas	Pesetas	Pesetas	Pesetas	Pesetas
General merchandise	1,305,051,409	1,057,638,871	556,032,959	999,640,145	860,202,898	1,316,275,320
Gold in bullion and coin	205,200	788,280	33,858,720	215,600	188,564,640	526,720
Silver in bullion and coin	2,828,617	20,917,344	33,710,204	.....	38,316,244	.....
Tobacco .....	.....	.....	285,209	9,367,342	557,669	6,368,220
Total	1,308,085,226	1,079,339,495	623,887,092	1,009,223,087	1,087,641,451	1,323,170,260

son with 1918, the number of Spanish steamers entering and clearing at Spanish ports was only a little more than half as great as during the latest normal pre-war year, while foreign steamers calling in 1913 numbered more than four times as many as in 1919. A still greater contrast is seen in the tonnage of the vessels, with a consequent reduction in cargo. The number of arrivals and departures of vessels at Spanish ports during the years 1913, 1918, and 1919 with tonnage is shown in the following tables compiled from *Resúmenes Mensuales de la Estadística del Comercio Exterior de España*:

May 17, 1886. The ministry in 1920 was as follows: Prime Minister and Marine (pro tem.), Señor Dato; Foreign Affairs, Marquis di Lema; War, Viscount Eza; Interior, Count de Bugallal; Justice, Don Mariano Ordóñez; Education, Marquis de Portago; Finance, Señor Domínguez Pascual; Public Works, Don Luis Espada; Labor, Don Carlos Canal.

CABINET CRISIS. The new ministry under Alende-Salazar encountered the same serious labor situation as its predecessors, for the employers and the extremists among the workmen were still in constant conflict. Throughout the country

Class of vessel and flag ENTERING		Number of vessels	Tonnage	Number of vessels	Tonnage	Number of vessels	Tonnage
With cargo:							
Steam—							
Spanish	6,503	6,412,862	2,962	2,568,306	3,818	3,287,648	
Foreign	4,568	5,325,914	257	292,284	1,021	1,285,978	
Sail—							
Spanish	676	30,577	2,286	146,584	2,141	127,072	
Foreign	374	80,752	352	53,769	529	78,427	
In ballast:							
Steam—							
Spanish	2,650	2,660,562	1,496	816,049	1,780	1,043,567	
Foreign	5,370	11,176,765	1,938	2,733,255	2,293	3,505,885	
Sail—							
Spanish	2,132	33,947	2,955	76,252	2,531	159,706	
Foreign	403	68,665	234	58,591	398	82,013	
Total		22,671	25,799,034	12,475	6,745,084	14,511	9,520,296
CLEARING							
With cargo:							
Steam—							
Spanish	7,865	7,931,660	4,381	3,493,222	5,161	4,225,666	
Foreign	7,672	11,165,238	2,205	2,943,507	3,515	4,511,181	
Sail—							
Spanish	1,563	54,121	5,686	177,898	4,967	241,461	
Foreign	459	92,241	473	86,825	505	95,249	
In ballast:							
Steam—							
Spanish	874	759,081	531	395,222	531	383,688	
Foreign	1,097	3,966,671	77	65,688	240	508,753	
Sail—							
Spanish	293	6,766	572	27,094	310	33,159	
Foreign	158	22,274	61	15,387	139	17,919	
Total		19,981	23,998,102	13,986	7,204,843	15,368	10,017,076

FINANCE. The budget for the fiscal year 1920-1921 was as follows:

Expenditure	Pesetas
The royal house	9,317,083
Legislators	6,646,000
Public Debt, pensions, etc.	535,147,637
Unemployed classes	87,700,000
Presidency of the Council of Ministers	1,053,000
Ministry of State	20,840,501
Ministry of Justice	96,658,510
Ministry of War	484,522,539
Ministry of the Navy	119,907,672
Ministry of the Interior	214,490,189
Ministry of Public Instruction	152,547,888
Ministry of Public Works	331,549,429
Ministry of Supplies	1,953,979
Ministry of the Treasury	34,903,516
Expenses for collecting revenues	185,146,886
Spanish possessions in Gulf of Guinea	2,887,239
Action in Morocco	168,963,296
Total	2,403,730,314
Revenue	Pesetas
Direct taxes	712,110,068
Indirect taxes	654,230,000
Monopolies	402,170,000
Receipts of the State	23,570,504
Receipts of the Treasury	50,640,000
Total	1,842,720,572

GOVERNMENT. Executive power is vested in a king who acts through a council of ministers, and legislative power in the Cortes of parliament of two houses, namely, the Senate and the Congress. The King, Alphonso XIII, was born

there was a succession of strikes and lockouts which threatened to involve it in economic ruin, and the government's efforts to improve the situation were unavailing. The ministry was several times on the point of resigning during the winter and a number of changes in personnel were made. It was only after several months of debate that it carried through its budget. After this it retired, April 28. Efforts to form a new government lasted a week and resulted in the choice of the Liberal leader and former prime minister, Eduardo Dato, who formed a ministry out of a combination of Conservatives and Liberals, to which leader of the Conservatives, including especially Señor La Cierva and Señor Maura promised their support in all efforts to deal with the social and economic problems. This was the eighth ministry that had been formed in Spain in the course of two years and during the same period there had been as many as fifty changes of personnel in the ministry. Municipal elections held February 8, resulted in large Socialist gains.

SOCIAL CRISIS. There were serious disorders at Barcelona, and in the summer the civil governor was murdered. Reports of alarming social and economic conditions were frequent during the year. In Andalusia and other agricultural regions there was much discontent among farmers and peasants. In some quarters

the landlords gave way to the agitation for reform, in others they left their estates and went to the cities. In October, it appeared from the press that a crisis was impending on account of the growing demands of the working classes. According to the reports of unsympathetic observers, the Spanish government had yielded to German and to Bolshevik influences, and had permitted a policy of terrorism to develop among the trades unions. The unionists had resorted to "direct action" in a series of outbreaks at Saragossa, Bilbao, Corunna and especially at Barcelona, and instead of taking a high hand the government had made concessions. For example, the railway workers having demanded an increase of wages and threatened strikes the prime minister, Dato, had ordered the companies to submit. The companies yielded but demanded in their turn increase of rates by way of compensation. Parliament was called to take up the matter of the rates but the prime minister without waiting for parliamentary action proceeded to order by simple decree the increase of the rates and then secured from the King the dissolution of parliament. What surprised the commentators of this affair was the fact that the Dato government was ostensibly Conservative. To be sure, it did not belong to the strict Conservative groups represented by such men as Maura and La Cierva but to the group that was trying to re-align the party of the Right in such fashion as to meet the changing social needs. His party did not draw back before social reforms of a radical nature, resembling in this respect to some extent the policy of Signor Giolitti in Italy. But unlike the situation in Italy there was in Spain a strong element of opposition in the parliament. Nor did the dissolution effect any change in that respect for the principal party leaders agreed in blaming the prime minister for the dissolution. According to some political observers, public opinion had been poisoned by German propaganda and in any case the spirit of various Spanish publications was favorable to the rehabilitation of Germany and hostile to the strict anti-German policy of France. In one publication, for example, occurred the following remark: "It is the misfortune of France that it has Marshal Foch who happens to be a great strategic genius. What can be done with the genius of Foch? Manifestly it cannot be left unemployed." And on the subject of French policy toward Russia it declared that "for a people to choose its own form of government is a lost liberty for all continents since France has the happiness to possess a Foch." While this had been a pro-German organ during the war, something of the same spirit was displayed by others. Nevertheless though radicalism followed the same line as in Italy, there was in general a firmer resistance to it during the year. The extremists found little sympathy in the press and many papers attacked Bolshevism in all its forms. The attempt of the Third Internationale to control labor policies was generally resented.

GOVERNMENT PROGRAMME OF REFORM. On October 6, the prime minister, Dato, announced a programme of commercial and industrial reform, including the organization of a ministry of labor and an institute of social reform for the settlement of disputes between employers and workmen; measures of insurances and housing; measures of co-operation in working state and

municipal lands and private estates; an increased railway tariff on commodities other than the necessities of life; and various measures pertaining to forestry, irrigation, water-power, etc. The issues that mainly drew the attention of the press were those pertaining to industry and to land reforms, and the new railway tariff. Early in October the military forces in Barcelona were increased on account of the danger of either a strike or a lockout. In certain industrial centers the workmen were threatening to take control of the industries. In other parts of Spain the feeling against the great landed proprietors was assuming more dangerous forms. At Barcelona at the close of the year the radical movement was reported to be under control. Leaders of the Sindicato Unico, to which was attributed the murder of the civil governor in the summer, were arrested and thirty-six of them were banished to a fortress in the Balearic Islands.

THE DECEMBER ELECTIONS. According to reports, the government was confident of a majority in the coming elections. It was given out on October 23, that the only serious opposition came from Señors La Cierva and Maura and that the Liberals and even the Catalans were showing an indifferent attitude. It was also said that even among the supporters of the former prime minister Maura and the former war minister, La Cierva, there was a numerous following for prime minister Dato. The elections held, December 18, showed nevertheless a diminished government majority. But the radical groups also were diminished and the monarchist majority was increased. The results as published at the close of the year were as follows: Conservatives (government group), 197; Conservatives (Maura group), 21; Conservatives (La Cierva group), 20; Liberals, 102; Republicans, 15; Reformists, 8; Socialists, 3; Catalanian Autonomists, 18; Monarchist Union, 5; Jaimists, 3; Independents and Catholics, 12. The Socialists attributed their loss to the trade union campaign carried on in the industrial centers against the participation of workmen in the elections.

SPAIN AND MOROCCO. The Moroccan question continued in 1920 to be the subject of sharp discussion both in France and Spain. The general situation may be summed up as follows: The conservative and patriotic element in Spain believed that Morocco was the last remnant of the old imperial domain and therefore held tenaciously to the purpose of retaining it. The Spanish prime minister, Romanones, had said that if his country relinquished Morocco, Spain would cease to have any ideal object in international politics. For more than twenty years the Moroccan problem has absorbed the attention of the Spanish foreign office, which has continually asserted Spain's right to the northern part of the Sherifian empire. The intervention under the Maura government in 1909 for the purpose of suppressing disorders led to a war of occupation and soon afterwards the cost of this new Moroccan policy steadily increased, rising from 52,000,000 pesetas in 1914 to 170,000,000 pesetas in 1920; and the African army in the latter year numbered at least 60,000 men. Including all the military and naval expenses, the Moroccan appropriation in 1920 was placed as high as 726,000,000 pesetas. From time to time opponents of the government protested

against this Moroccan venture as costly and unprofitable. It was pointed out that Spain after ten years' effort had succeeded in conquering only about one-fifth of the twenty-four thousand square kilometers that nominally belonged to her. At this rate, according to the criticism of a former Spanish cabinet minister, half a century of warfare would be required to complete the conquest. On the other hand the Conservative party aimed at an enlargement of Spanish territory and especially at the acquisition of Tangier which had been placed under international control in 1912. When the war broke out this element comprising beside the Conservatives, the military party, and those who favored colonial expansion, counted on the defeat of England and France. German propaganda made the most of this spirit and promised Morocco and Gibraltar to Spain if she should preserve the policy of hostile neutrality toward the Allies, and at the same time occupy by force Tangier and Gibraltar. During the war sharp attacks on England were constantly appearing in the press. All these fell flat as soon as the armistice was signed. So far as England was concerned nothing more was heard of Spain's pretensions to Gibraltar, but expansion at the expense of France continued to be advocated. Tangier was claimed as an integral part of Spanish soil and a group of politicians undertook to sow discord between France and England and to take advantage of any friction that should develop between the two countries. According to French sources a strong party in Spain was frankly anti-French. The militarists who continued to exert much influence upon Spanish sentiment demanded Tangier as the objective of the Spanish military movement in Morocco. When the international conference of neutrals was called Spain sent as a delegate a former member of the cabinet who strongly favored this policy. On the other hand nothing showed definitely that the Spanish government itself was committed to it. In the French press some alarm was expressed at Spain's attitude. It was said that Tangier was only one point in the Mediterranean question which really involved the division of control over the Mediterranean countries between France and Spain.

CUSTOMS CHANGES. In December, a decree increased certain customs duties to a point that amounted to virtual prohibition and bore with especial severity upon French imports. It was taken as retaliation on the part of Spain for the French decision to tax foreign wines. The goods subject to this increase in Spain were especially those which France imported, as, for example, perfume, velvet, silk, fur cloaks, automobiles, etc. The measure occasioned much discontent among the commercial classes of France and it was criticised also in Spain as tending to increase the cost of living, which was already excessive. See NAVAL PROGRESS.

SPANISH. See PHILOLOGY.

SPANISH LITERATURE. The literary activity of Spain for the year has been greater than it was a year ago. The official figures in the *Bibliografía Española* for both years at the end of November (the last to reach us) were 1256 in 1919, and 1371 this year.

NECROLOGY. Once more death made heavy demands upon Spanish letters and scholarship, and again, as last year, the losses were more numerous in Spanish America. In the first place

we lost that towering figure, the genial Benito Pérez Galdós, whose keen vision and sympathetic heart had made him see and understand to their very depths most of the failings and qualities of his people. His literary work depicts all phases of Spanish life and consists of some twenty dramas, more than thirty novels, and forty-six volumes which he entitled *Episodios Nacionales*, five series each of which was to contain ten volumes. As he published the forty-sixth volume in 1912 it is very much to be feared that he did not complete the fifth series. As they stand they form a wonderful gallery of portraits of significant persons and incidents in the history of Spain from Trafalgar (1805) to Cánovas del Castillo (who was killed in 1897). The other Spanish loss was Mariano de Cavia, who, although elected to the Royal Spanish Academy in 1916, had never taken his seat. He was a consistent worker for purity of speech. The death of the poet and critic Enrique Fernández Granados (Perpetual Secretary of the Mexican Academy), deprived Mexico of one of her most gifted and influential writers. Argentina lost very heavily through the passing of her illustrious son Rafael Obligado, the poet of the *Gaucha*, and author of the *Tradiciones Argentinas*. Chile's loss of Manuel Antonio Román affects her journalism, lexicography, and poetry, since he was director of the *Revista Católica*, author of a *Diccionario de chilenismos* in five volumes (finished two years ago), and had translated into verse the *Tristia* of Ovid.

LITERARY CRITICISM in several forms is well represented: León de Corral, *Alvaro de Luna, según testimonios inéditos de la época* (interesting study concerning the favorite of Juan II); F. Fernández de Béthancourt, *Historia genealógica y heráldica de la monarquía, Tomo X* (posthumous publication of a work whose first nine volumes had been highly praised); H. Thomas' *Spanish and Portuguese Romances of Chivalry, the Revival of the Romance of Chivalry in the Spanish Peninsula, and its Extension and Influence Abroad* (very important re-examination of the subject); J. Alemany Bolufer, *Tratado de la formación de palabras en la lengua castellana*; N. Alonso Cortés, *Jornadas* (sundry articles) and *Zorrilla: su vida y sus obras, vol. III*; M. A. Caro, *Obras Completas, II* (ed. by V. E. Caro and A. Gómez Restrepo); J. Sejador y Frauca, *Historia de la lengua y literatura castellana, XII* (last volume and deals with regional and modernist movements); Carmen de Burgos, *"Figaro", (Revelaciones, "Ella" descubierta, epistolario inédito)*; Cervantes, *Rinconete y Cortadillo* (2d enlarged ed. by F. Rodríguez Marín), and *Comedias y Entremeses, V* (in the set of his *Obras Completas* published by R. Schevill and A. Bonilla y San Martín); P. Henríquez Ureña, *La Versificación irregular en la poesía castellana*; J. Ribelles Comín, *Bibliografía de la lengua valenciana* (work crowned by the Biblioteca Nacional); El Caballero Audaz, *Lo que se por mí* (Series 9 of these essays); Luis Vélez de Guevara, *El Rey en su imaginación* (ed. by J. Gómez Ocerín, as *Teatro antiguo español, vol. 3*); and R. Menéndez Pidal, *Un aspecto en la elaboración del "Quijote"* (presidential address to the Ateneo de Madrid), and *Estudios literarios* (reprint of several of his most important recent studies). Notable lexicographical contributions are: Real Academia Gallega, *Diccionario*

gallego-castellano, cuadernos 12, 13, 14; E. Constantino Guerrero, *Diccionario filológico, Estudio general sobre el lenguaje venezolano con referencia al de España y al de otros países de la América latina*; and F. Rodríguez Marín, *Un Millar de voces castizas y bien autorizadas que piden lugar en nuestro léxico*.

POETRY offered the following, among others (and it should be noted that the first four mentioned are the first poetic works of their respective authors): L. Felipe, *Versos y oraciones de caminante*; J. de Contreras, *Marqués de Lozoya, Poemas castellanos* (treating Segovian legends); F. Escrivá de Romaní, *Pomas maduras: Poemas*; and Lope Hernández, *Melancolías-Versos* (some of them mark him as of the school of Becquer). The genial Murcian poet Vicente Medina begins the publication of his *Obras completas*. Vol. 1, *Viejo Cantar*, contains some of his best work. Ricardo León published vol. 12 of his *Obras Completas: Lira de bronce*.

DRAMA presented a few good things but seems on the whole not to have been up to the standard of previous years. Arniches and Abati produced a bright comedy, *No te ofendas, Beatriz*; J. López Pinillos (Parmeno) won two successes with *El condenado* and *La red*. J. Fernández Villar was much applauded for his jocose comedy *Alfonso XII, 13; Cristobalón* by M. Linares Rivas was very well received; *Pedro Fierro* won a great triumph and makes one consider J. López Merino as a dramatist of much promise; C. R. Avelilla's play *El ocaso de los demonios* was successful, but missed the full value of its fundamental idea; vol. 27 of the *Teatro* of J. Benavente contains *La Vestal de Occidente*, *Una Señora*, and *Una pobre mujer*; the Alvarez Quintero brothers kept to their usual level, as witness *El mundo es un pañuelo* and *Malvaloca* (crowned by the Royal Spanish Academy with the Espinosa and Cortina prize); and J. J. López Marco gave us *Miss Cavell: Dama de la Cruz Roja* (an impressive drama in verse).

FICTION. Pío Baroja continued his *Memorias de un hombre de acción* with the volume *Los contrastes de la vida*; and in addition produced a volume of essays *Las ciudades—La sensualidad perversa*, and a discourse before the Junta de la Cultura Vasca, *Divagaciones sobre la cultura*. Others to be noted are: Espina Concha, *El metal de los muertos* (Novela), and *Pastorelas*; W. Fernández Florez, *Ha entrado el ladrón* (Novela), now in its third edition; G. Hernández Mir, *El patio de los naranjos* (Novela), which was awarded the Gregorio Pueyo prize; and B. Morales San Martín, *Obras Completas*, vols. I and II: *El ocaso del hombre* and *El enigma de lo imposible*, both symbolic novels. José Francés won new laurels with his volume *Cuentos del mar y de la tierra*. The novel *La Sirena Ciudad* of Andrés Peláez Cueto bears a prologue wherein Joaquín Alarcón gives interesting facts concerning the author's development. Gabriel Miro wrote *El humo dormido* (which has been very well received by the critics); and there is a second edition of a volume of Becquer's *Obras escogidas* published on the occasion of unveiling the monument of Becquer in Sevilla in 1911, with a preliminary discourse by the Alvarez Quintero brothers.

ROYAL ACADEMY activities, in the way of reception of new members, were greater than usual. Death has taken such heavy toll of

the Academy in recent years that there is an unusually large number of members elect. Of these, six qualified last year to take formal possession of their chairs. Gabriel Maura Gamazo, Conde de la Mortera, read his discourse *Algunos testimonios literarios e históricos contra la falsa tesis de la decadencia nacional*, and succeeded Julio Burell whose death occurred so soon after his election that he had never taken possession of his chair, a circumstance that made Maura Gamazo really succeed the illustrious José Echegaray (see YEAR BOOK, 1916). Manuel de Sandoval, the critic and lyric poet, read his discourse *De lo inconsciente y lo involuntario en las obras literarias y poéticas*, and succeeded to the chair recently vacated by Eduardo de Hinojosa, successor to Núñez de Arce. Emilio Gutiérrez Gamero, the novelist, succeeded Francisco Commellerán, his discourse being *La novela social*. In October the celebrated scientist Leonardo Torres Quevedo, succeeding Pérez Galdós, presented himself for admission, with a discourse on an *Unión internacional hispano-americana de bibliografía y tecnología científicas*, urging the preparation of a technological dictionary of Castilian. The dramatist Seraffín Alvarez Quintero entered in November, his discourse being *El diálogo en el arte dramático*. The last member to be received was Armando Palacio Valdés, elected fourteen years previously to succeed José María de Pereda.—The Academy awarded the "Piquer" prize for dramatic works for 1918 to *Esclavitud*, by J. López Pinillos, and for 1919 to Blasco Jimeno, by F. López Martín. Director Antonio Maura published his necrological discourse on Pérez Galdós, with an official list of all his works.

SPANUTH, AUGUST. German writer on music, died in Zurich, early in January. He was born in Brinkum, March 15, 1857. From 1886 to 1893 he lived in Chicago, teaching at the Musical College. For the next 13 years he was in New York as critic of the *Staats-Zeitung*. From 1906 he lived in Berlin as editor of *Signale für die musikalische Welt*.

SPIRITUALISTS' ASSOCIATION, NATIONAL. An association whose belief is that "spiritualism is the science, philosophy, and religion of continuous life, based upon the demonstrated fact of communication, by means of mediumship, with those who live in the spirit world." Incorporation took place in 1892 to organize the numerous local societies and to expand the movement. The Twenty-Eighth Annual Convention was held at Columbus, Ohio, in October, 1920. It was the largest and most enthusiastic gathering of that body yet held. Reports showed an excellent financial condition and great growth in membership of the subsidiary bodies. Most of the time was taken in considering a report of a committee on revision of the national constitution and by-laws. Many radical changes were made, including more stringent methods for the conduct of the auxiliaries and issuing of certified credentials to ministers, licentiates, healers, and missionaries. Ordination of ministers was given exclusively to the National body, after being recommended by the State Associations.

The bequest of an estate of possibly \$500,000 was made to the Association by John L. Jackson of Fort Worth, Texas. The case was taken to the Court of Appeals on the ground that mediumship is illegal by relatives of the deceased. The Association is vigorously defending its claims.

A widespread interest in spiritualism has been greatly aided by the lectures of Sir Oliver Lodge and the espousal of the cause by Sir A. Conan Doyle in England. The next convention will be held in Detroit, Mich., in October, 1921. Reports for 1920 show that there are in the United States more than 200 churches, about 550 ordained ministers, about 1700 mediums, and about 700,000 adherents. The officers in 1920 were: President, George D. Warne; secretary, George W. Kates; treasurer, Cassius L. Stevens. Headquarters are maintained at 600 Penna Ave., S. E. Washington, D. C.

SPITTELER, CARL. Swiss writer to whom the Nobel prize (of 1919) for literature was awarded in November. His writings, all in German, and not translated into English, include *Truths Spoken in Jest*; *My Experiences*; *Literary Reminiscences*, and the epic poems, *Prometheus and Epimetheus* and *Olympian Spring*. Spitteler was 75 years of age in the April preceding the award. See NOBLE PRIZE.

SPITZBERGEN. The status of this archipelago as a no man's land (*Terra nullius*) where neither security nor redress existed among the various international miners and trappers, has been finally remedied. A clause in the Russo-German Peace treaty of Brest-Litovsk indicated that both nations had certain claims to the possession of Spitzbergen. To adjust its status an international convention was called, in which participated Denmark, France, Great Britain, Holland, Italy, Japan, Norway, Sweden and the United States. The treaty awarding the sovereignty to Norway was signed by Great Britain, Feb. 16, 1920, and the signature of the other contracting parties were completed on April 9. It was hoped that ratification would be completed in time for Norway to assume entire control of the archipelago during the summer of 1921. The rights of mineral claims made by other nations are said to be conserved. In the summer of 1920 there were mined about 250,000 tons of coal. Great activity was exercised in erecting plants, machinery, buildings, etc. of modern types so as to facilitate the speedy and economical working of coal mines, and ensure the comfort of the miners. Norway sent during the year an expedition to make geological, hydrographical and topographical surveys to the south of Bell Sound. Dutch, British and Swedish expeditions also took the field to conserve and arrange for the exploitation of the mineral and other claims already located. Electric light systems have been installed to facilitate winter mining, since there are now permanent settlements near the mines. Wireless stations are to be built at Cape Bowman and at Green Harbor to keep the inhabitants in touch with the outside world. Few realize that Spitzbergen is accessible during the entire year, and is within two days steaming of Norway and of Scotland.

SPORTS. Articles covering the activities in the various sports during the year 1920 will be found under such titles as ATHLETICS, TRACK and FIELD, BASEBALL, FOOTBALL, GOLF, OLYMPIC GAMES, TENNIS, YACHTING, etc.

SPURGEON, WILLIAM PORTER. Editor, died, June 4. He was born at Norwich, England, Nov. 29, 1867; came to the United States in 1881, and was educated in public and private schools. From 1894 to 1913 he was on the *Washington Post*, being the editor of that paper

from 1907 to 1913. After that he was editor of the *Washington Herald*, 1914-16 and became again managing editor of the *Washington Post* in January, 1917.

SQUASH. See COURT TENNIS.

STANDARD OIL COMPANIES. See PETROLEUM.

STANDARDS, UNITED STATES BUREAU OF. The Bureau of Standards, of the Department of Commerce, during the fiscal year 1919-1920 passed from a war-time to a peace basis. The testing work carried out during the year was in some cases slightly less than during the war period but in general the volume of this work was not decreased to any extent, owing to the fact that while the amount of work for the military departments had been somewhat less, that for the industries had been very much greater. The total number of tests conducted during the year for the Government was 72,398, and the tests conducted for the public numbered 34,501 or a total number of all tests of 106,899. During the year the Bureau's staff comprised 381 statutory employees and 600 engaged in research and investigations specially authorized by Congress. The annual conference on weights and measures was held at the Bureau from May 24-27, and a number of important questions were discussed. Among the subjects of special interest were sales by net weight, standardization of various commodities in package form, and proposed legislation in reference to installation of testing gasoline measuring pumps. The work of the section devoted to the testing of internal combustion engines was considerably broadened during the year and included besides work with aircraft engines, various work in connection with automobiles and trucks of great value to manufacturers and users of automobiles. The manufacture of optical glass for certain of the other Government departments started during the war was carried on with satisfactory results. A large number of standard samples for reference work in laboratories was distributed and several new samples issued during the year.

An important investigation to determine the probable reason for the failure of freight car wheels in service was carried out for several months and it was expected that it would lead to material improvements in the manufacture of such wheels.

The results of the Bureau's activities during the year were partly shown in 106 new publications. These publications comprised 50 scientific papers giving results of new scientific researches, 37 technological papers dealing with practical applications of science in industrial fields and engineering, 16 circulars containing important compiled technical data of special use to the industries, especially to the scientific and industrial laboratories, and 3 miscellaneous.

STANDARD TIME. During the year Salvador adopted Standard Time, one hour slower than Washington, to take effect January 1, 1921. This gave Salvador the same time standard as other Central American States and also the Central United States, namely that based on a meridian of 90° Longitude West from Greenwich.

STARKIE, WILLIAM JOSEPH MYLES. British educator and author, died, July 21. He was after 1911 chairman of the Board of Intermediate Education. He was born at Sligo, Ireland, Dec. 10, 1860, and educated at Trinity

College, Cambridge, and Trinity College, Dublin; graduating with high honors. His publications include: Editions of Aristophanes with notes and translations and many contributions on classical subjects to the periodicals: *Recent Reforms in Irish Education* (1902); *Continuation Schools* (1912), etc.

STASNY, KARL RICHARD. American pianist and teacher, died in Roxbury, Mass., April 21. He was born in Mayence, March 16, 1855. From 1882-91 he toured Europe as a successful concert-pianist. In 1891 he settled in Boston as teacher at the New England Conservatory, where he remained till his retirement in 1918.

STATE BANKS. According to the United States Comptroller of the Currency the combined statements of State banks, savings banks, private banks, and loan and trust companies, to the number of 22,109, as of June 30, 1920 (or the dates nearest thereto), indicated an increase in the number of such banks, including scattered returns from private banks not under State supervision, of 771 banks over the number which reported on June 30, 1919. The aggregate resources of these banks on June 30, 1920, amounted to \$29,667,855,000, an increase during the year of 12.46 per cent, or \$3,287,355,000. The combined capital and surplus June 30, 1920, was \$2,902,435,000, while the capital and surplus on June 30, 1919, amounted to \$2,628,530,000. Loans and discounts aggregated \$17,171,090,000, an increase of more than \$3,000,000,000 over the year before. Other items of resources were: Investments (bonds and securities), \$7,201,060,000; cash on hand, \$628,027,000; checks and other cash items, \$450,257,000; due from banks, \$2,712,040,000. Capital stock paid in amounted to \$1,478,473,000. Total capital stock paid in, surplus, and undivided profits were \$3,331,908,000, as compared with \$2,972,000,000 the year before. Individual deposits were \$23,694,372,000.

The accompanying table gives the figures for the respective classes of institutions.

ies—and 12 private banks, with combined liabilities of \$44,287,000, excluding 7 whose liabilities had not yet been ascertained. The failures reported were distributed among 27 States. The number in each State was as follows:

Arkansas	4	Montana	1
Florida	2	Nebraska	2
Georgia	4	New York	2
Idaho	1	North Dakota	2
Illinois	4	Ohio	1
Indiana	3	Oklahoma	2
Iowa	3	Oregon	1
Kansas	3	Pennsylvania	1
Kentucky	1	South Dakota	2
Louisiana	1	Texas	5
Massachusetts	7	Utah	1
Michigan	2	Virginia	2
Minnesota	1	West Virginia	2
Missouri	6		

STATE DIRECTOR OF MUSIC. See *MUSIC, General News.*

STATISTICAL ASSOCIATION. AMERICAN. One of the oldest scientific associations in the United States having been organized in Boston, Mass., in 1839. Its objects are "to collect, preserve, and diffuse statistical information in the different departments of human knowledge." It has given much of its time to advisory work for Federal, State, and municipal bodies, with a view to improving the methods of collecting and presenting statistical data. In 1920, for example, it was engaged on a programme for rendering the Federal census of manufactures more generally useful, the nature and purpose of the plan being summed up as follows:

"The comprehensive census of manufactures taken by the government every five years is of comparatively little use to business in the United States. Preparation and publication of the elaborate report requires about two years. In their respective fields the Department of Agriculture and the Bureau of Mines have shown what can be done to furnish valuable data promptly. The American Statistical Association hopes to secure legisla-

RESOURCES AND LIABILITIES OF 22,109 STATE, SAVINGS, AND PRIVATE BANKS AND LOAN AND TRUST COMPANIES, JUNE 30, 1920
(In thousands of dollars)

RESOURCES	18,195 State banks	680 mutual savings banks	1,087 stock savings banks	1,408 loan and trust companies	799 private banks	Total, 22,109 banks
Loans and discounts (including overdrafts)	\$8,968,410	\$2,591,480	\$978,047	\$4,601,508	\$128,915	\$17,263,796
Investments (bonds, securities, etc.)	2,226,916	2,716,282	323,596	1,902,075	32,191	7,201,060
Banking house, furniture and fixtures	262,042	41,599	32,277	163,233	4,046	503,197
Other real estate owned	42,961	9,980	5,555	26,609	7,720	92,825
Due from banks	1,549,571	183,527	70,783	878,692	29,467	2,712,040
Checks and other cash items (including ex- changes for clearing house)	332,848	1,191	4,836	193,615	1,463	533,952
Cash on hand	393,935	41,942	35,215	148,455	6,480	626,027
All other resources	238,099	33,016	55,668	405,831	2,344	734,958
Total resources	\$14,009,781	\$5,619,017	\$1,506,413	\$8,320,018	\$212,636	\$29,667,855
LIABILITIES						
Capital stock paid in	920,211		69,183	475,745	13,334	1,478,473
Surplus fund	527,019	834,546	39,422	509,929	13,046	1,423,962
Undivided profits	222,599	87,975	13,247	102,194	3,458	429,473
Due to banks	436,644	116	841	424,542	2,139	864,282
Dividends unpaid	9,126	126	38	4,095	101	13,486
Individual deposits	10,873,035	5,186,845	1,349,625	6,085,675	169,573	23,664,753
Postal savings deposits	10,705	1	1,736	3,673	28	16,133
Notes and bills rediscounted	136,365	144	52	146,546	1,639	284,746
Bills payable	549,608	395	24,029	214,144	5,870	794,046
Other liabilities	324,469	8,869	8,250	353,475	3,488	698,501
Total liabilities	\$14,009,781	\$5,619,017	\$1,506,413	\$8,320,018	\$212,636	\$29,667,855

During the fiscal year ending October 31, 1920, it appeared that there were failures of 66 banks, other than national, including 54 State banks—45 commercial, 2 savings, and 7 trust compan-

ies by which the United States Census office may collect and analyze data regarding the continually increasing output of manufacturing plants of the United States. It would not be difficult to secure for key industries figures giving the number of units of output.

Totals expressed in units of quantity would be more significant and probably more reliable than figures expressing values only. The matter has been actively taken up with the officials of the Department of Commerce and of the Bureau of the Census. All those thus far approached have expressed themselves as generally in favor of the plan. It rests with the business men of the United States to act together to secure the necessary legislation. The executive officers of the Chamber of Commerce of the United States of America have been authorized by vote of the Executive Board to present this matter to the Bureau of the Census. It is expected that other influential organizations will also take an active part in this campaign."

Owing to the rapidly growing importance of business statistics the Association gave especial attention to the problems they presented and at the close of the year was engaged on a project for a Business Research Committee which should represent the Association in the various fields of trade associations, manufacturing, advertising, publishing, banking, trade, etc., with a view to promoting standards of business research.

The Association held its 82d annual meeting at Atlantic City, N. J., December 29-30. The papers read and matters discussed included the following subjects: Population and vital statistics; morbidity statistics in industry; office and field work of the Fourteenth Census; wage determination; industrial medicine; industrial education; index numbers; the national income and its distribution. The report of the joint committee on the Census was accepted and the Association approved its recommendation that the Bureau of the Census prepare and publish scientific analyses of the Census results in the form of scientific monographs on the important topics. A local section of the Association was established at Pittsburgh, Pa. in the course of the year. The total membership of the Association in December, 1920 was 988. Officers: President, Carroll W. Doten; Secretary-Treasurer, Robert E. Chaddock; Editor of the quarterly publication entitled *American Statistical Association*, William F. Ogburn.

STEAM ENGINE. With the high cost of fuel in 1920 the thoughts of steam engine designers and builders were turned toward securing increased economy and efficiency, though comparatively little was accomplished in the way of improved construction of the older types of engines. For larger units of course, the Steam Turbine (q. v.) was pre-eminent and the unaflo engine, called in England the terminal exhaust engine, was increasingly popular on account of its demonstrated economy. The first unaflo engine to be built in the United States was made in 1914 (see *YEAR BOOK* for 1914 and 1916), and since that time the type found an ever increasing vogue. As much of the moisture in the expanded steam was eliminated at the end of the working stroke and before compression began, and as through the terminal exhaust slots and the piston acting as a valve and large size, almost full vacuum could be obtained with the least possible back pressure in the case of a condensing engine, there resulted a substantial economy. In other words the steam could be compressed to boiler pressure with a minimum amount of work expended during such compression. The first uses of the unaflo engine in the United States were to drive electric generators, or in other services where constant speed governing was essential, but in 1920 variable speed engines were built suitable for pumps or other purposes supplied with heated

cylinder heads. The first unaflo engine thus to be used had a single steam cylinder connected to a single double acting water cylinder, while two units were also placed to work in one shaft with a 90 degree crank. The result of using the unaflo system in pumping units was to secure a high piston speed much greater than ever before obtained. Unaflo direct-connected air compressors and ammonia compressors were built in 1920, and one installation of novel design consisted of six unaflo engines operating in pairs driving exhausters and controlled by a vacuum in the suction pipe. Furthermore the unaflo principle was applied to a marine engine and the first reversing engine on this system to be built in the United States showed a valve motion quite different from any employed in the European reversing engines. This marine engine made use of a modified form of valve motion which had been developed specially for the variable speed engines. In general this comprised a long revolving cam straight on the face but tapering on the back. The cam shaft could be moved along endways to vary the cut-off. In the marine engine valve motion the cams were arranged in steps with backing cams in the same shaft as fine variations in cut-off were not required.

The reciprocating engine which many authorities believed to be more efficient than the steam turbine up to 1500 horsepower was coming in for more attention, as with the high cost of fuel many elements that once were neglected were found worthy of consideration.

In the 1917 census of central electric light and power stations issued by the BUREAU OF THE CENSUS it was interesting to note that practically all the steam engines in both commercial and municipal stations were to be found in the lowest group, namely "500 hp. or under," and the average size of these machines was well under 200 hp. The decrease in the number of these small machines was particularly marked for commercial plants, from 4535 in 1907 to 3253 in 1917, accompanied by decrease in horsepower rating from 781,673 to 593,538. On the other hand, municipal plants reported an increase in number of units in this small-sized group from 1648 in 1907 to 1947 in 1917, with a corresponding increase in horsepower rating from 236,893 to 313,419. In the group between 500 hp. and 2000 hp. there was some decrease both in number and horsepower of engines reported by commercial stations. In the next group 2000 hp. to 5000 hp., while there was a slight decrease in number of units and rating subsequent to 1912, there was actually a considerable increase in both since 1907. For engines over 5000 hp. there was very little change and municipal plants had at no time any steam engines with a capacity as high as 2000 hp.

Obviously there had been a decrease in the number and capacity of the steam engines used in central power stations, for while in 1907 from a total rating of 1,810,040 horsepower in use 798,025 horsepower were produced by steam turbines, while in 1917, out of 8,449,076 total horsepower 1,701,677 was produced by steam engines. In 1920 it was estimated by the *Electrical World* (New York) that out of a total of 11,476,000 horsepower then installed in central stations, 1,781,100 horsepower or 15.5 per cent was produced by steam engines and 9,695,500 horsepower or 84.5 per cent by steam turbines. See **STEAM TURBINES.**

STEAM TURBINES. Progress in the design and construction of steam turbines in 1920 involved improvement of details and attempts to secure increased efficiency stimulated not a little by the prevailing high costs of fuel. Longer life through improved design and better operation also were sought during the year. Notable performances of turbines both large and small cited by Professor A. G. Christie of the Johns Hopkins University, and published in the *Annual Review* number of *Power* (New York) were those of a 25,000 kw. General Electric Turbine, an English 1500 kw. Brush-Ljungström turbine, and a 1000 kw. Allis-Chalmers. The 25,000 kw. machine installed at the West End Station of the Union Gas and Electric Co., at Cincinnati, operating with 234 lbs. gauge pressure, 595° Fahrenheit temperature, 1145 inch absolute exhaust pressure, and with a steam consumption of 10.46 pounds per kw.-hr. at 20,708 kw. load showed an efficiency ratio referred to electric horsepower of 77 per cent. The 1500 kw. Brush-Ljungström turbine at 1460 kw. showed an efficiency ratio of 67.9 per cent referred to electrical horsepower with 208 lb. gauge, 583 degrees Fahrenheit temperature, 0.68 lbs. absolute exhaust pressure, and steam consumption of 12.42 lbs per kw.-hr. The Allis-Chalmers 1000-kw. turbine operating at 1016-kw. load, 130 lbs. gauge, 99.4 per cent quality, 2.49 inches absolute exhaust pressure, had a steam consumption of 16.83 lbs. per kw. hr. or an efficiency ratio of 66.2 per cent.

It was the opinion of many mechanical engineers that the limit of size in large turbine units had not been reached in 1920, through manufacturers were not turning out during the year any turbines of unusual size or design. The largest units in use were the 60,000 kw. Westinghouse three-cylinder sets, while the largest single rotor turbine was the 45,000 kw. General Electric unit at the Detroit Edison Co. It was believed that a development of the near future would be the building of turbine units of 100,000 kw. for some of the larger power plants. There were put in operation during the year the following notable stations: The Springdale station of the West Penn Power Co. with 20,000 kw. Westinghouse units; the Delaware station of the Philadelphia Electric Co. with 30,000 kw. General Electric turbines; the West End plant of the Union Gas and Electric Co. of Cincinnati, with 25,000 kw. General Electric turbines, and the 60,000 kw. Westinghouse units at the Cheswick Power Co., Cheswick, Pa.

The new work of the year either designed or in course of construction included the Meadows Station of the Hartford Electric Light Co. with 20,000 kw. units; the Calumet Station of the Commonwealth Edison Co. of Chicago with 35,000 and 30,000 units, and the Hell Gate Station of the New York Edison Co. with 35,000 kw. units. Other units of varying sizes were being installed at different power stations during the year.

There was considerable development in progress both as regards detail and major principles. A mercury-turbine set developed by the General Electric Co. was under construction for installation upon a commercial scale by the Hartford Electric Light Co. so that it might receive a thorough trial. In England development work was being pushed to secure special steam turbines of 1000 hp. and above, for airplane and

airship service, but the problems of the condensers for such machines were giving trouble. A recent and successful practice was to connect steam turbines by reduction gears with efficient multi-stage centrifugal pumps. One of these of 1225 horsepower capacity at Baltimore performed satisfactorily an official test while even larger turbo-pumping sets were being built for Philadelphia. Improvements, though not radical, were to be noted during the year in the steam turbines installed on shipboard both for reduction gears and for electric drive. One of the foremost was securing more accurate tooth-cutting for the gears.

DEVELOPEMENT OF THE USE OF STEAM TURBINES. The 1917 census of central electric light and power stations issued by the Bureau of the Census stated that the total rating of all central-station steam-power equipment in 1917 was 8,449,076 hp., of which 1,701,677 hp. was credited to steam engines and 6,747,399 hp. to steam turbines. In 1907 the total rating of steam engines was 1,810,040 hp. and only 798,025 hp. was credited to steam turbines. According to statistics compiled by the *Electrical World*, the total installed steam power equipment in 1920 was 11,476,000 hp., of which 15.5 per cent or 1,781,100 hp. was credited to steam engines and 84.5 per cent or 9,695,500 hp. to steam turbines. These data indicated that since 1917 steam engines had increased by only 79,423 hp. while steam turbines increased 2,948,100 hp.

The *Electrical World's* statistics for 1920 indicated that New York led in steam turbines with 1,335,000 hp., followed by Pennsylvania and Ohio with 1,062,100 hp. and 1,050,000 hp. respectively. Those states reporting the greatest steam engine rating in 1920 were Pennsylvania, Illinois and Ohio, all of which report more than 100,000 hp. The states of Pennsylvania, New York, Illinois, Ohio and Massachusetts reported in 1920 a total of 5,555,900 steam horsepower, equivalent to 48.5 per cent of the total rating of steam engines and turbines in the United States.

According to the census report already quoted an interesting development in this field was the growth in horsepower capacity of steam turbines. In both privately owned and municipal stations these turbines were found to be most numerous in the group between 500 and 2000 hp.—598 or 40.2 per cent of the total for commercial plants and 106 or 50.2 per cent of the total for municipal plants. The municipal plants also reported the greater part of their steam turbine rating 40.9 per cent of the total in this group. Commercial stations, on the other hand, exhibited a rapid increase in the number and the rating of turbines of the larger capacities until in 1917 of the total horse power 76.1 per cent was furnished by these larger units, which average 13,105 hp. per turbine, as opposed to an average of only 6,318 for steam engines in this group. There was during the period from 1907 to 1917 a rapid increase in the size of steam turbines directly connected to generators, and by 1920 units of 40,000 to 60,000 hp. were not uncommon.

STEEL. See IRON AND STEEL.

STEELE, SANFORD H. Financier, died at Pinehurst, N. C., December 19. He was born at Stanstead, Canada, November 26, 1847; graduated at Dartmouth College in 1870 and practiced law in New York City. He became inter-

ested in the affairs of the General Chemical Company, of which he was counsel, and he was made president of the company and held the office for many years.

STETSON, FRANCIS LYND. Lawyer, died in New York City, December 5. For many years he was one of the leading lawyers in the city of New York. At one time he was partner of Grover Cleveland and was organizer of the United States Steel Corporation of which he was general counsel from the beginning. He was born in Keesville, N. Y., April 23, 1846; graduated at Williams College in 1867; studied law at the Columbia Law School and was admitted to the bar in 1869. Among the important corporations on which he served as counsel were the Northern Pacific Railway, International Mercantile Marine Co., Erie Railroad, United States Rubber Co. and Southern Railway. His practice began in New York City in 1870 and he was appointed assistant corporation counsel to Mr. William C. Whitney, when the latter was at the head of the city's legal department. On leaving this office, he became an attorney of the firm of Bangs and Stetson. He was the adviser of Mr. J. P. Morgan on the occasion of the latter's loan to the government and he was counsel to Samuel J. Tilden in the Tilden-Hayes controversy. For many years he was an influential figure in the Democratic party and until the late Joseph H. Choate reached the height of his career, he was probably the best known lawyer in New York City.

STEVENS, GEORGE WALTER. Railroad president, died, August 18. He was born at Utica, Ohio, Nov. 3, 1851; and entered the railway service in 1864, working on various lines and rising to the position of general manager in 1891. After Feb. 1, 1900, he was president of the Chesapeake and Ohio Railway, and he also became president of the Hocking Valley Railway and the Wellston and Jackson Belt Line.

STEVENS, ISAAC NEWTON. Lawyer, died February 11. He was born at Newark, Ohio, Nov. 1, 1858. He taught school in Ohio and Illinois, and after studying law began practice in Denver, Colo., in 1880. He was district attorney of the State in 1888-92 and tried many famous cases. He was afterwards editor and proprietor of several Colorado newspapers. For six years he was chairman of the Republican City Committee of Denver. In 1912 he was the Progressive party's candidate for the United States Senate. In 1913-15 he was city attorney of Denver. After 1915 he was president of the Commonwealth Casualty Company of Philadelphia. He was one of the pioneers in the introduction of beet sugar industry into Colorado. He wrote the *Liberators* (1908); *The American Suffragette* (1911); and *What is Love?* (1917).

STEVENS INSTITUTE OF TECHNOLOGY. A non-sectarian institution for the technical education of men at Castle Point, Hoboken, N. J.; founded in 1870. There were 862 students enrolled for the fall session of 1920. There were 48 members of the faculty. In the course of the year eight instructors resigned and one died (Leo Joseph Costello); and thirteen new instructors were appointed. The endowment funds amounted to \$1,530,000 and the income for the year was \$263,167. The library contained about 16,000 volumes. Four scholarships were endowed, amounting to \$40,000, in memory of the men of Stevens who died in ser-

vice during the World War. Two brick barracks buildings which were purchased from the United States Government were being altered for further needs of the Institute to meet the increased attendance. One-half of the larger of the two buildings was to house the Department of Electrical Engineering.

STOCK-RAISING. See LIVE STOCK.

STOCKWELL, JOHN NELSON. Astronomer, died, May 18. He was born at Northampton, Mass., April 10, 1832, and educated in the common schools of Ohio. He distinguished himself by original researches in astronomy and he wrote a large number of astronomical works, including *Theory of the Moon's Motion*, (1891); *Eclipse Cycles*, (1901); *Theory of Planetary Perturbations*, (1904); and in addition, various mathematical works, including elaborate tables for the computation of ocean tides, in 1919.

STOKES, Sir GABRIEL. British civil official, died at the beginning of November at Dublin, Ireland. He was born, July 7, 1849 and educated at Kilkenny college, and at Trinity college of Dublin. Entering the Indian civil service in 1871, he became after some years revenue secretary to the Madras government and was chief secretary in 1898-1903. In 1906 he acted as governor of Madras and he was a member of the Council, 1903-8. He was prominent in philanthropic work, and especially in the Society for the Prevention of Cruelty to Children.

STONE. According to the United States Geological Survey, the quantity of stone sold in the United States in 1919 for different uses amounted to about 71,380,000 short tons, an increase of 4 per cent over the quantity sold in 1918 but considerably less than that sold in 1917. Increases were recorded for most of the products whose output was curtailed during the war, but decreases were made for the most urgent war products—flux, refractory materials, and limestones for use in manufactures, the quantity of flux decreasing 25 per cent. The total value of the stone sold in 1919 was about \$115,000,000, far in excess of any value previously recorded. Record values were made by granite, basalt (trap rock), marble, limestone, and miscellaneous stone, and the value of the sandstone sold exceeded that for any year since 1914. This unusual increase in the value of the products of the stone industry, like the increase in the value of the products of other industries, is attributed to the larger cost of supplies, fuel, and especially of labor. The producers reported that business was poor during the first part of the year but gradually improved until, during the last six months, the demand exceeded the output that could be made with the insufficient and inefficient labor available.

STONE, WILBUR FISK. Lawyer, died at Denver, Colo., December 27. At one time he had been a justice of the Colorado Supreme Court. He was born at Litchfield, Conn., in 1833 and went to Colorado in 1860. From 1891 to 1904, he served as one of the judges of the United States court of Mexican and Spanish land grant claims. He edited newspapers in Evansville, Ind., and Omaha, Neb., and was the first general attorney of the Denver and Rio Grande railroad.

STONE, WILLIAM ALEXANDER. Former governor, died, March 1. He was born at Delmar, Pa., April 18, 1846 and served in the Pennsylvania volunteers in the Civil War. Admitted

to the bar in 1870, he practiced at Wellsboro, Pa., till 1877, after which he practiced in Pittsburgh. He was United States District Attorney of the western district of Pennsylvania, 1880-6 and member of Congress, 1891-9. He was elected governor for the term, 1899-03 and after holding that office, became prothonotary of the Supreme and Superior Courts of Pennsylvania. In politics he was a Republican.

STRAITS SETTLEMENTS. A British crown colony in Malaysia, comprising Singapore, Penang, and Malacca, whose area and population are distributed as follows:

	Sq. M.	Pop. 1911	Pop. 1919	Capital
Singapore	807	311,985	387,336	Singapore
Penang	571	278,003	305,139	Georgetown
Malacca	720	124,081	153,008	Malacca

Under the administration of the Straits Settlements are the Cocos Islands, Christmas Islands and the colony of Labuan. The leading city and one of the most important ports of the East is Singapore which contains the greater part of the population of the island of Singapore. The predominant racial element is the Chinese who numbered 274,574 and the natives of India, 94,213. The great bulk of the rubber production originates in the Malay Peninsula. The Straits Settlements colony derives its importance as a market for plantation (or Para) rubber from the fact that practically the entire rubber trade of the Federated and Non-Federated Malay States is conducted through its ports, Singapore and Penang, and is included on this account in the trade statistics of the colony. As illustrating the development of the rubber industry, it only needs to be mentioned that the Malayan exports of this product increased from 430 tons in 1906 to 108,305 tons in 1918, and the value from \$1,200,000 to \$87,758,729. The foreign trade of the Straits Settlements for 1919, amounting to \$936,150,778, increased \$206,997,475 over that of the preceding year. Imports totaled \$460,515,189 in 1919 and \$383,199,723 in 1918; exports reached \$475,635,589 in 1919 and \$345,953,580 in 1918. These figures represent goods bought for consumption and exports into the market of each settlement from foreign countries and other parts of the colony, but they do not include trans-shipments. Live animals, food, drink, and narcotics imported into the Straits Settlements in 1919 were valued at \$164,783,101 and in 1918 at \$133,694,123. Similar exports totaled \$127,920,159 in 1919 and \$108,609,960 in 1918. Import values of raw materials were recorded for 1919 as \$215,541,443 and for 1918 as \$179,127,932. Exports under this heading in 1919 were worth \$286,363,051 and \$195,799,108 in 1918. The budget for 1919 was as follows: Revenue, \$34,108,465; expenditure, \$34,901,233. Governor and commander-in-chief in 1920, Sir Lawrence N. Guillemard.

STREET RAILWAYS. See MUNICIPAL GOVERNMENT.

STREETS. See ROADS AND PAVEMENTS.

STRIKES AND LOCKOUTS. Official data for strikes and lockouts in the United States, during the calendar year 1919 were not complete in time for publication in the preceding **YEAR BOOK**, and are therefore presented here as compiled by the *Labor Review*:

In 1919 there were nine disturbances in each

of which 60,000 or more persons were directly concerned: A general strike in Tacoma and Seattle in February in sympathy with the metal-trades strikers, in which 60,000 persons were involved; 65,000 employees in the Chicago stockyards struck in August; 100,000 longshoremen along the Atlantic coast struck in October; 100,000 employees in the shipyards of New York City and vicinity struck in October; 115,000 members of the building trades were locked out in Chicago in July; 125,000 in the building trades in New York City struck in February; 250,000 railroad shop workers struck in August; 367,000 iron and steel workers struck in September; and 435,000 bituminous coal miners struck in November. The number of persons concerned in these nine strikes and lockouts was upward of 1,600,000, while the total number of persons involved in strikes and lockouts during 1919 was 4,112,507. The strikes of 1919 were not accompanied by the violence and loss of life that at times characterized the strikes of former years, owing perhaps to the fact that employers more frequently closed their establishments during the strike, and employed strike breakers in a less number of cases. On the other hand, the number of working days lost in 1919 increased greatly and the average duration of strikes was nearly twice that in each of the preceding three years. It is difficult to particularize, for many of the strikes involving a few thousand persons caused the public more inconvenience than some of those involving many times that number. Many of the larger strikes occurred in New York City and vicinity, where, in addition to those already mentioned, 35,000 waist and dress makers struck in January, 50,000 cloak and suit makers in May, 25,000 shirt makers in July, 50,000 men's clothing workers in October, 16,000 millinery workers in September, 10,000 rag pickers and paper sorters in March, as many paper box makers in August, and as many pressmen in October, 14,000 painters in August, 15,000 shoe workers in February, 15,000 street car men in August, 16,000 marine workers in January, 17,000 harbor workers in March, 18,000 teamsters in October, 20,000 longshoremen in March, 25,000 ship-builders in November, 40,000 tobacco workers in July, and 40,000 tug and ferrymen in October. In March, 12,000 woolen operatives struck in Passaic, 24,000 silk workers in Paterson in February and 17,000 again in August, 32,000 textile workers in Lawrence in February, 30,000 in New Bedford in May, and 35,000 in Fall River in December. In July, 40,000 marine workers along the Atlantic coast struck, 20,000 meat cutters in cities along the Atlantic coast in August and again in October, 12,000 telephone operators in New England in April, 15,000 street railway men in Chicago in July, 10,000 building laborers in Chicago in June, followed by 13,000 carpenters in July, 15,000 carpenters in Columbus, Ohio, in May, 17,000 machinists in Toledo in May, 15,000 miners in Illinois in July, 10,000 railroad shopmen in western Pennsylvania in October, 15,000 steel workers in Pennsylvania in July, 43,000 anthracite miners in Pennsylvania in September, 10,000 tobacco workers in Philadelphia and 11,000 in Allentown in July, 15,000 in Porto Rico in January, and as many more in Tampa in October, 10,000 men in the building trades in Dallas in June, 28,000 metal workers in Seattle in January, and 25,000 workers in the shipyards of San Francisco and vicinity.

ty in February and 40,000 more in October. The following table shows the number of strikes and lockouts in the country in 1916, 1917, 1918, and 1919:

Year	Number
Strikes:	
1916.....	3,681
1917.....	4,324
1918.....	3,232
1919.....	3,253
Lockouts:	
1916.....	108
1917.....	126
1918.....	105
1919.....	121

STRIKES IN 1920. Returns for the last six months were not available at the close of the year. Heavy losses resulted from the railway strike in April on the part of men outside the old organizations and known in the press as "outlaws." It began April 2, when about 700 switchmen and yardmen on the Chicago and Milwaukee railway quit work, and spread rapidly in a few days, seriously affecting most of the lines of the country. Trains in some instances were abandoned *en route* and there were cases of violence reported. It was condemned by the presidents of the four great railway brotherhoods April 9 as an illegal movement on behalf of the "One Big Union" and having nothing to do with wages. The government arrested twenty-three of the leaders, April 15, on the charge of violating the Sherman and Lever acts. After the roads decided to declare the places vacant and to recruit new operatives most of the men went back to work. The freight congestion caused by the strike at certain points was not relieved for several weeks. The Railroad Labor Board appointed by the President, April 13, refused to hear the pleas of the "outlaw" strikers. For the wage award of the Railroad Labor Board see article RAILWAYS. The strike of the longshoremen of New York and other coast cities in the autumn of 1919 did not result in any increase of wages to the coastwise men, while the others received 80 cents an hour and \$1.20 for overtime by the award of the National Adjustment Committee. The coastwise men at first submitted but early in March struck for 80 cents an hour. In New York City the attempt was made to resume work by means of non-union men, but the checkers, weighers, freight-handlers, and truckmen uniting in a Transportation Trades Council refused to handle the non-union goods. The New York Merchants' Association thereupon set on foot an independent trucking system. The question of legality was raised in respect to the refusal of non-union goods, and a decision of a justice of the New York Supreme Court declared in effect that a boycott of open-shop merchandise was a "conspiracy against the public." The American Federation of Labor promised aid to the men of whom about 20,000 were reported to be out of work in June. In June, members of the New England Workers' Association, an organization of brassworkers not affiliated with the Federation of Labor, went on strike for 75 cents instead of 45 cents an hour for unskilled labor. About 20,000 were said to be involved and bomb-throwing and riots accompanied by loss of life were reported. Down to June, rough estimates place the number of men out of work as the result of strikes at 273,643, and the

amount lost in wages at over \$28,000,000. During these first six months the majority of workers affected were in New York, Massachusetts, and Illinois. The temporary injunction secured by the Michaels, Stern Co. of Rochester against the Amalgamated Clothes Workers in October, 1919, was made permanent June 10, 1920, and at the same time the court awarded the company \$100,000 for damages caused to its business by the union's activities. The strike had followed the company's refusal to recognize this union as representative of its employees. The American Garment Workers and the American Federation of Labor had supported the Company.

GREAT BRITAIN. The number of trade disputes in Great Britain causing stoppages of work, reported to have begun in 1920, was 1,715, "the highest total recorded for any year," according to the official Labor Gazette. The total number of workpeople involved in these disputes (including those thrown out of work at the establishments where the disputes occurred) was about 1,930,000, and a further 90,000 were involved in disputes in progress in 1920 which began in 1919. The aggregate loss of working days in all disputes in 1920 was about 27,000,000. These totals were smaller than those for 1919, but the number of workpeople involved was greater than for any year prior to 1919, and the aggregate loss of working time shown was greater than in any year except 1912 and 1919. See GREAT BRITAIN.

STRONG, EDWIN ATSON. Physicist. died February 4. He was born at Otisco, N. Y., January 3, 1834; graduated at Union College in 1858, and after teaching school at Grand Rapids, Mich., became superintendent of the public schools there. After 1845 he was head of the department of physics at the State Normal School at Ypsilanti, Mich. He was prominent in work for the promotion of science and education in Michigan during a period of nearly sixty years, and was the author of many pamphlets on scientific and educational subjects, besides various laboratory manuals.

STRONG, Sir THOMAS VEZEY. Former Lord Mayor of London, died in London October 3rd. He was born in London in 1857 and became the head of a prominent firm of wholesale paper manufacturers. Though active in the cause of temperance he was not conspicuous in political affairs until 1897 when he was elected alderman. He took an active part in the affairs of the city and became an effective speaker. He was Lord Mayor in 1910-11 and during his administration participated in many important public ceremonies. His chief administrative work was the fusion of the city parishes into the corporation for the purpose of rating and valuation.

STUART, Sir THOMAS ANDERSON. Scottish-Australian physiologist, died February 28. At the time of his death he was professor of physiology in the University of Sydney, New South Wales and dean of its medical faculty. He was born at Dumfries, Scotland, June 30, 1856 and educated at the University of Edinburgh, where he graduated with high honors and at the University of Strassburg. He became president of the Royal Medical Society in Edinburgh in 1882. Removing to Australia he was twice president of the Royal Society of New South Wales and a member of the medical board of New South Wales and held other important offices in his profession including the presidency of the Health

Society. He was also president of the Zoölogical Society and he organized the Royal Society Expedition to Funafuti in proof of the Darwinian theory in respect to the formation of coral reef. He took a leading part in the promotion of the existing public health system in North South Wales and in various other medical and sanitary improvements; and he was one of the founders of the Australian Institute of Medicine. His publications were generally contributed to the scientific journals on anatomical and physiological subjects. He was president of the British Emigration League of Australia.

STUCK, HUDSON. Archdeacon of the Yukon and mountain climber, died at Fort Yukon, Alaska, October 10. To him was given the credit of being the first white man to climb to the summit of Mt. McKinley. He was born in England, Nov. 11, 1863, and educated at Kings College, London, but removed to the United States, and studied at the University of the South, Sewanee, where he graduated in theology, in 1892. He taught school in Texas where he became rector at Cuero and was subsequently dean of St. Matthews Cathedral at Dallas, 1894-1904. In the following year he went to Alaska on foot or carried by dogs and he gave an account of his experiences and observations in his writings. In March, 1919, he received special honors from the Royal Geographical Society in recognition of his work as a traveler and mountain climber. His writings include *The Ascent of Denali* (Mt. McKinley, 1914); *Ten Thousand Miles With a Dog Sled* (1914); and *Voyages on the Yukon and its Tributaries* (1917).

STYRIA. A crownland of Austria before the downfall of the Austro-Hungarian Empire; incorporated in the new state of Jugo-Slavia (q. v.). Area, 8,862 square miles; population, Dec. 31, 1910, 1,441,157, of whom 70.5 per cent spoke German, and 29.37 Slovenian. Capital, Graz, with an estimated population of 156,500.

SUBMARINE BOATS. See BATTLESHIPS AND OTHER WAR VESSELS.

SUBWAY SYSTEMS. See RAPID TRANSIT.

SUDAN, ANGLO-EGYPTIAN. An African territory under British authority lying between Egypt and Uganda, and extending from the Red Sea to the limits of Wadai in Central Africa. Capital, Khartum. Area, about 1,041,400 square miles; population estimated in 1917 at 3,400,000. The chief towns are Khartum (16,325); Omdurman (84,022); Khartum North (10,828). Reported values of imports and exports in 1918 were respectively, £E4,024,582 and £E3,923,771. Revenue and expenditure according to the budget estimates of 1919 were respectively £E2,992,793 and £E2,720,513. Total length of railways, about 1500 miles, including the line from Cairo, via Khartum to El Obeid, and the Nile and Red Sea railway from Port Sudan to the mouth of the Atbara river. Governor-general and Sirdar in 1920, Major-general Sir L. O. F. Stack. See EGYPT.

SUGAR. The year 1920 was a remarkable one in the history of the sugar business, particularly as to the high prices reached and the rapidity with which the advance occurred and then declined. While Government control was not exercised in 1920 the Lever Act was still in force. Reports of a shortage prevailed in the spring, and although at no time did users

in the United States go without the necessary supply, previous experience led to efforts to provide against a contingency. In Europe sugar continued to be rationed and prices ruled high (See also FOOD and NUTRITION.)

The sugar crop of the world in 1920, according to estimates of Willett and Gray, amounted to 12,692,900 tons of cane sugar and 4,625,000 tons of beet sugar, a grand total of 17,317,900 tons. While this represents an increased production of 2,093,995 tons over the preceding year, it is approximately a million and a half tons smaller than the pre-war production. This decline is mainly in beet sugar. While the United States has shown a gain of nearly 50 per cent in beet sugar since prior to the war, Europe has not yet recovered half its former production, although in 1920 a very material advance in that direction was made. The total European sugar beet crop was estimated at 3,640,000 tons as compared with 2,803,480 tons in 1919-20, 3,183,188 in 1918-19, and 8,475,000 in 1913.

The sugar crop in the United States was a large one. The sugar beet crop was a third larger than the largest ever before recorded, and indicated a production of 1,109,609 short tons of beet sugar as compared with a five-year average (1914-1918) of 788,617 tons. Colorado led in manufacture in 1920, followed by Michigan, California, Utah, Nebraska, Idaho, Ohio, and Wisconsin, in the order named. The cane sugar acreage and production of Louisiana were considerably above 1919, but the yield per acre brought the total down to 186,000 tons as compared with a five-year average of 241,720 tons. The maple sugar crop amounted to 18,187 tons, or somewhat less than in 1919.

The total production of cane sugar in the United States, including Porto Rico, Hawaii, and the Virgin Islands, was 1,153,460 tons; that of Cuba 4,000,000 tons; the British West Indies, 186,500 tons; the French West Indies, 45,000 tons; San Domingo, 189,000 tons; and Mexico, 100,000 tons. The estimate for some of the other leading countries was as follows: Demarara, 100,000 tons; Central America, 35,000 tons; Peru, 350,000 tons; Argentina, 225,000 tons; Brazil, 300,000 tons; Philippine Islands (exports), 300,000 tons; British India (consumed locally), 3,000,000 tons; Java, 1,515,000 tons; Formosa and Japan, 350,000 tons; Australia and Fiji Islands, 235,000 tons; Egypt (consumed locally), 80,000 tons; Mauritius, 250,000 tons; Natal, 100,000 tons; Reunion and Mozambique, 40,000 tons each.

The decline in prices left Cuba in such financial condition that in October a moratorium decree was issued to run for fifty days, and then extended, in order to relieve the banks, but it had the effect of practically paralyzing business. A large loan from the United States was contemplated but difficulties arose in the way of carrying this out and at the close of the year the condition was serious.

Following up the interest in sugar production in England, a beet sugar factory is being erected on the the Kelham estate in Nottinghamshire, the government having agreed to take an equal number of shares with the public, up to £250,000, in the company formed to control the enterprise (Home Grown Sugar, Ltd.).

SULLIVAN, ROGER C. Politician, died April 14. He was born at Belvidere, Ill., Feb. 2,

1861, and educated in the public schools. For many years he was political leader in Chicago, having been in 1890 a member of the Cook County Democratic Committee, and from 1904 to 1916 member of the Democratic National Committee. He was president of the Ogden Gas Company of Chicago.

SUMATRA. See DUTCH EAST INDIES.

SUN. See ASTRONOMY.

SUNDAY SCHOOL UNION, AMERICAN. This is a volunteer association founded in 1817 of members of different denominations whose purpose is to teach Christian truths, especially to the young. Work is carried on throughout the United States in organizing Sunday schools, and distributing religious books and magazines. During the year ending March 1, 1920 the one hundred and third annual report shows that 840 schools were organized, 724 schools reorganized, 2934 schools aided, 176,566 families visited, 18,449 sermons delivered, 7804 children brought into existing schools, 4,358 professed conversions, 242 prayer meetings established, 92 Young People's Societies formed, 161 preaching stations opened, 38 churches organized, 17 churches built, books and periodicals to the value of \$21,748.61 sold, and to the value of \$3,244.72 given away. During the year the total circulation of periodicals has been 1,831,596 of which 100,000 were manufactured especially for use by soldiers and sailors, as against 250,000 for the previous year. The general circulation is somewhat less than the previous year due to the closing of the schools during the influenza epidemic. The Union has found it hard to obtain men to go out to act as missionaries and for this reason the work has been somewhat hampered. Further information may be obtained from the annual report. The officers for 1920 were: President, Martin Luther Finckel; recording secretary, William H. Hirst; treasurer, John E. Stevenson; and educational advisor, George A. Barton. National headquarters are maintained at 1816 Chestnut St., Philadelphia.

SUPAN, ALEXANDER. See METEOROLOGY.

SURGERY, PROGRESS IN. There were no great advances in surgical science or practice during 1920 and the reader is referred to the articles Anemia, Surgical Treatment of; Cancer; Radium, etc, for surgical subjects of interest. The use of radium in cancer is spoken of as radiosurgery, just as radioactive beverages such as are used in gout, and inhalations of radium emanation are spoken of as radio-medicine. The reader is also referred to the articles under Surgery in the Year Book for 1919 and 1918. The vast body of surgical knowledge which should have accrued during the war and its influence on the civil surgery of today are chapters which are yet to be written. There was a tremendous activity in capital surgery which began about 1875 as a result of the introduction of sepsis and persisted for many years but now shows signs of slowing down and giving place in part to milder measures. This is due partly to the introduction of radium, X-rays, and electro-coagulation, in part to increasing proficiency in operating through the natural passages without the necessity of cutting operations, and to a further large extent to the use of serums and vaccines and certain drugs. Gangrene of the lung was once looked on as a condition for the knife, but recently it has been successfully

treated with the injection of antiseptic solutions directly into the deep air passages combined with the use of a special serum. Abscess of the liver, once a surgical affection pure and simple, is sometimes cured by the drug emetine. In the realm of major surgery the most remarkable innovation of recent times seems to have been the cure of a case of angina pectoris by resection of the cervical portion of the sympathetic nerve.

SURINAM. See DUTCH GUIANA.

SURVEYING. See AERONAUTICS.

SUTTON, CHARLES WILLIAM. British librarian and author, died, April 24. He was born at Manchester, April 14, 1848 and for many years was librarian of the Manchester public free libraries. He was prominent in various literary and antiquarian societies and wrote works pertaining to Lancashire, biography and local history. He contributed many articles to Leslie Stephen's *Dictionary of National Biography*.

SWAMP FEVER. See VETERINARY MEDICINE.

SWARTHMORE COLLEGE. A non-sectarian co-educational institution at Swarthmore, Pa., founded in 1869. The enrollment for the regular fall session of 1920 was 500. There were 42 members in the faculty. Endowment funds amounted to \$2,225,000. The income for the year was \$232,293. The Hicks Hall of Engineering was erected. A successful endowment campaign for \$1,000,000 was completed, and a gift of \$200,000 was received from the General Education Board. Joseph Swain, the president, resigned.

SWAZILAND. A British protectorate in South Africa, situated in the southeast corner of the Transvaal and north of Zululand. Area, 6678 square miles; population estimated in 1914 at 107,117; European population estimated in 1919 at 1700. The chief products are: Grain, tobacco, millet, peanuts, and vegetables. Rich mineral resources are reported, but have not been developed, with the exception of tin of which the exports in 1919-20 were valued at £66,676. Revenue and expenditure for 1919-20 were: £91,801 and £87,073, respectively. The protectorate is under the High Commissioner for South Africa, that office being held in 1920 by Prince Arthur of Connaught. The resident commissioner in 1920 was D. Honey.

SWEDEN. A kingdom in the extreme north-western part of Europe, occupying the eastern and larger division of the Scandinavian peninsula. Capital, Stockholm.

AREA AND POPULATION. The area is placed at 173,035 square miles and the population was estimated, Dec. 31, 1918, at 15,813,850. According to the census of 1910, the only inhabitants of other than Scandinavian stock were 25,290 Finns, 7138 Lapps and a few thousand others. The movement of population in 1918 was as follows: Births, 117,739; deaths, 104,183; marriages, 38,626. The immigrants in that year numbered 4932, and the emigrants, 4853 of whom 1416 went to the United States. The chief towns with their population at the beginning of 1919 were: Stockholm, 408,456; Göteborg, 197,421; and Malmö, 110,459.

AGRICULTURE. The number of farms under cultivation in 1917 was 447,695. The acreage in hectares and produce in tons for the principal crops in 1919 are shown in the following table:

Crop	Acreage (hectares)	Produce (tons)
	1919	1919
Wheat	140,913	258,792
Rye	372,068	586,689
Barley	166,672	280,878
Oats	712,872	1,111,730
Mixed Corn	260,782	475,749
Leguminous crops ¹	44,748	67,756
Potatoes	168,689	2,111,213
Roots ²	127,650	3,838,872
Hay ³	1,342,878	4,300,969
¹ Peas, beans, and vetches. ² Sugar-beet and fodder-roots. ³ And fodder plants.		

The following table gives the value of the harvests of 1919 and 1920:

Crops	1919	1920
Wheat	\$26,150,505	\$21,036,585
Rye	57,815,404	46,341,463
Barley	22,520,202	18,089,433
Oats	73,108,838	58,841,463
Mixed grain	32,761,616	26,361,585
Potatoes	41,417,677	33,838,333
Root-fodder	25,990,404	20,914,654
Hay	168,470,182	185,386,279
Straw	67,759,838	54,532,520
Total	\$515,994,666	\$414,887,315

According to the special report on Swedish forests prepared under the United States Bureau of Foreign and Domestic Commerce (*Special Agents Series No. 195*), Sweden occupies the leading position in the lumber world, not on account of the quality produced, but on account of scientific forest management and efficient manufacturing and selling methods. Fifty-one per cent of the country is comprised within the 55,000,000 acres of forests, of which 13,000,000 are public. Because of the realization in Sweden of the supreme importance of forests in the national life, stringent laws with regard to cutting have been adopted. A Swedish forest expert is quoted as saying that "the position of Sweden as an independent nation and as a civilized country is contingent upon the existence or non-existence of forests." During normal years before the war the exports from Sweden of forest products aggregated \$90,000,000, or 44 per cent of the total exports. The Swedish government accordingly considers the perpetuation of the forests of such vital importance that no one is allowed to endanger the future of the timber stands by reckless exploitation for the sake of immediate profit. This point of view is so generally accepted that no difficulty has been experienced in connection with the government's control of the cutting of timber on private lands. Because the cutting is thus restricted and it is a matter of necessity to get the utmost value out of the cutting permitted, particular attention is paid in Sweden to the elimination of waste in the forests. The high stumps prevalent in America are unknown in Sweden. Top logs, too, are not left in the woods. The closest possible attention is paid not only to price but to the utilization of waste products in logging operations. Strict laws govern the management of the Swedish forests, varying only with difference in climate. These laws have to do with cutting and with the reforestation of cut-over lands. Lately a law has been enacted to prevent the cutting of immature trees unless such cutting is necessary in order to improve the condition of the forests. Reforestation has been carried on in Sweden by

both public and private enterprise. The forest owners regard it as a commercial and paying proposition.

COMMERCE. The leading exports and imports for 1917 were as follows:

	Imports 1917 Kronor	Exports 1917 Kronor
Textile manufactures	69,776,254	10,629,258
Corn and flour	35,282,653	1,138,216
Colonial wares	41,223,852	2,249,434
Raw textile material and yarn	89,455,167	700,461
Minerals, of imports mostly coal	172,031,565	110,869,046
Metal goods, machinery, &c. Live animals and animal food	100,350,551	281,810,552
Hair, hides, and other animal products	65,979,087	58,418,765
Metals, raw and partly wrought	22,293,774	9,655,498
Timber, wrought and unwrought	54,208,557	238,825,594
Woodpulp, paper and paper manufactures	10,381,924	286,671,621
Other articles	7,827,480	299,561,452
	139,799,460	99,021,383
Total	758,610,304	1,349,551,300
	(41,773,733L.)	(76,465,287L.)

The following information was supplied by the United States Bureau of Foreign and Domestic Commerce. An examination of Sweden's exports and imports for the first nine months of 1919 and 1920 disclosed very substantial gains in the foreign commerce of the country for 1920, the bulk of which was cleared through Göteborg. A comparative table of exports and imports for the first nine months of 1919 and 1920, is herewith given:

	First 9 months of	
	1919 Tons	1920 Tons
Exports		
Fish	31,466	16,604
Meats	3,527	5,019
Dairy products	31	17
Cereals	2,574	10,258
Red whortleberry	1,698	661
Shoes	246	48
Wood tar	5,846	7,484
Turpentine oil	202	611
Carpenter and barrel manuf're	3,787	7,697
Wood chips	1,079	2,160
Woodpulp products	646,628	994,741
Cement	84,335	61,061
Matches	18,614	30,886
Rails and bars	6,679	6,542
Chemicals	12,977	34,056
Mining products	2,240,133	2,993,566
Tubes of clay	8,931	8,980
Bottles and tins	3,554	3,906
Wire	20,356	14,021
Tubes	7,512	9,475
Horse nails	2,071	3,886
Knives	72	74
Sheet iron and tin goods	851	2,230
Nails and tin tacks	992	1,203
Tools	620	347
Petroleum stoves and bulbs	303	822
Total	3,055,084	4,216,355
Imports		
Fish	35,479	24,733
Meats	31,286	15,938
Dairy products	5,310	7,792
Cereals	217,521	197,743
Tobacco	4,465	4,754
Provisions	61,576	72,604
Fruits	8,458	12,198
Wine of all kinds	4,299	3,429
Textile manufactures, materials	35,960	51,989
Linooleum mats	1,726	5,095
Hides	9,941	10,920
Shoes	124	444

Imports	First 9 months of	
	1919	1920
	tons	tons
Rubber	1,543	1,299
Oils	130,755	149,083
Oleomargarine	991	1,389
Vegetable fats	15,244	5,700
Soap	1,714	1,037
Colors	2,087	5,773
Linseed	5,823	25,658
Oil cakes	51,064	50,685
Cement	3,382	8,840
Chemicals	300,393	349,718
Common salt	8,873	19,509
Coal	1,435,577	2,487,583
Minerals	85,705	52,425
Sheet iron	19,304	45,223
Iron, cold-rolled, etc.	245	1,738
Bottom sheets, sleepers.	3,643	5,711
Rails, tramway rails.	24,442	36,345
Tubes	8,528	24,625
Total	2,465,458	3,674,980

Especially noteworthy was the increase in exports of Swedish electrical and agricultural machinery indicating a healthy growth in both industries. To the American exporter Sweden's wood-pulp products, matches, chemicals, mining products, and timber have been of principal interest. Of these, matches, chemicals, and newsprint paper are manufactured in large quantities. It will be noticed, for example, that the country practically doubled its export of newsprint paper and its exports of other paper more than trebled. The chemical trades also showed remarkable growth, while the trades of mining products and timber were barely holding their own. Of the imports, motor vehicles showed the greatest percentage of increase, a 600 per cent being observed. These were largely imported from the United States. The other great article of Swedish import is raw phosphate, which showed an increase of nearly 100 per cent, or from 57,000 tons to 103,000 tons during the 1920 period compared with 1919. Potash from Alsace-Lorraine showed a decrease in importations from 117,000 tons to 32,000 tons. Possibly of even greater interest to the American exporter was the development of the Swedish market for cereals, tobacco, provisions, textiles, oils, and chemicals. Recently cereals have been largely imported from the two Americas, but a steady decline was noticeable for the year 1920. American hosiery, silk, and cotton had long dominated the market. The English and Germans, however, practically controlled the woolen trade. Tobacco is largely imported from the United States by the Swedish tobacco monopoly, but this trade has also showed declines during the year. The dried fruit trade, largely in the hands of American exporters, also revealed a declining market.

RAILWAYS. The railway mileage in 1918 was 9385, of which 335 was owned by the state. In the early part of 1920 the Swedish parliament definitely approved of the electrification of the State Railways between Stockholm and Göteborg and has appropriated for the work 23,000,000 kronas (normally \$6,164,000). It was expected that the conversion from steam to electrical operation would be completed by 1925.

GOVERNMENT. Executive power is in the king who acts with the advice of the council of state, and legislative power is in a diet of two chambers, both elected by the people. The ministry at the close of 1920 was constituted as follows:

Prime Minister, Baron Louis de Geer; Foreign Affairs, Count Wrangel; Justice, Prof. Ekeberg; Social Affairs, M. Elmquist; Communications, M. W. Murray; Finance, M. Tamm; Trade, M. C. G. O. Malm; Defense, Gen. Hammerskjöld; Agriculture, Prof. Hansson; Education and Ecclesiastical Affairs, Dr. Bergquist; and, without portfolio, M. Dahlberg, M. Ericsson.

ECONOMIC DIFFICULTIES. Early in the year there were many strikes owing to the failure of employers to increase proportionately the wages under the new eight hour law, which went into effect January 1. While the employers insisted on an increased output, the workmen demanded increased wages. The question of taxation caused dissension in parliament and in the coalition government under Edén which resigned March 6.

SOCIALIST MINISTRY. For the first time in Sweden a Socialist ministry was now established (March 10). It was constituted as follows: Prime Minister, Hjalmar Branting; Foreign Affairs, Palmstjerna; Justice, Undén; War, Hansson; Navy, Eriksson; Interior, Svenson; Treasury, Thorsson; Education and Public Worship, Olsson; ministers without portfolio, Sandler and Nothin. Its programme included socialization of industry by law; expropriation of large estates with compensation; democratization of the courts with free legal defense; abolition of the death penalty; disestablishment of the state church; disarmament. A marriage law passed the Rikdag, April 17, depriving the husband of the legal guardianship of his wife and the right to dispose of her personal property; empowering the wife to acquire property in her own right; requiring the wife's consent to the sale of the family home by the husband, if he owned it, and dispensing with any court action in the case of a divorce if both parties desired it, the sole requirement being that the parties register before a judge.

THE ALAND ISLANDS. The question of the Aland Islands has been discussed in its general aspects in preceding YEAR BOOKS. In 1920 it was a subject of investigation by an International Commission of three jurists, to which was submitted the respective arguments of Sweden and Finland. This commission in its opinion announced September 15, held that the controversy hinged on the question of political status and that this political status was at present undergoing a change. In the first place, the population of the island was demanding separation from Finland. In the second place, Finland was not yet a definitely constituted state. The agreement of Mar. 30, 1846, which provided that the islands should not be fortified or used as a military base, was in the opinion of the commission still in force. Sweden and Finland agreed, September 18, to accept the mediation of the League of Nations in the dispute. The Council of the League thereupon decided to appoint a committee to investigate and arbitrate the subject. There was strong feeling however in both countries. The Finnish government declared that it would never give up the islands while Sweden insisted that the inhabitants should decide for themselves. The latter was certain to result in the decision favorable to Sweden, hence it was opposed by Finland. The League committee ended its investigation about December 10, and its report was pending at the close of the year.

NEW MINISTRY. The autumn elections to the Rikdag cost the Branting ministry ten seats and the Independent Socialists four, leaving the parties of the Left in a minority in the second chamber. A new cabinet was formed October 20, on the principle of non-partisanship and efficiency under the prime ministership of M. De Geer. A non-political cabinet was the logical consequence of the deadlock resulting from the refusal of the Liberals to join either with the Socialists or the Right and from the opposition of the Socialists either to a government based on the Right or a combination of the three parties in proportion to their strength. The new Prime Minister as chairman of the committee on the working day and as a Liberal, seemed to represent the general public. The programme did not pronounce definitely upon any economic policy.

SCANDINAVIAN ECONOMIC COOPERATION. Early in October a convention of economists from the Scandinavian countries was held in Stockholm for the purpose of discussing coöperative measures on the part of the Scandinavian communities, including measures of housing, stabilizing the currency, etc. Various measures were recommended including the establishment of central banks which would fix the rates for the various foreign currencies. Among the opinions expressed was the view that the neutral countries were to blame for the depreciation of their currencies in that they had abandoned the gold standard, and it was argued that the increased cost of living was the result of this depreciation to a far greater extent than of the increased cost of production. See NAVAL PROGRESS.

SWEDENBORGIANS. See NEW JERUSALEM, CHURCH OF.

SWEDISH LITERATURE. See SCANDINAVIAN LITERATURE.

SWIMMING. No branch of sport made such rapid strides in popularity during 1920 as did swimming, with the United States leading the way. Interest was primarily centred in the Olympic Games which attracted the world's best swimmers of both sexes and resulted in a signal triumph for the representatives of the United States. A complete record of the competitions at Antwerp will be found under the title OLYMPIC GAMES.

The senior outdoor championships of the Amateur Athletic Union were held at Chicago, the winners in the principal events being: 100 yards, Duke Kahanomoku, Honolulu, Hawaii; 440 yards, Norman Ross, Illinois A. C.; one-mile, Eugene Bolden, Illinois A. C. The women's outdoor championship held at Honolulu, Hawaii, Detroit, Mich., and Los Angeles, Cal., resulted as follows: 100 yards, straightaway, Ethelda Bleibtrey, New York City; 50 yards, Ethelda Bleibtrey; long distance, Marie Curtis, Detroit, Mich.

The winners in the senior indoor championships were: 100 yards, Tedford Cann, Detroit A. C.; 220 yards, free style, Tedford Cann; 500 yards, W. L. Wallen, Illinois A. C.; 150 yards, backstroke, Perry McGillivray, Illinois A. C.; fancy diving, Clyde Swensen, Los Angeles A. C.; plunge for distance, Fred Schwedt, Detroit A. C.

The women's senior indoor championships resulted as follows: 100 yards, Ethelda Bleibtrey; 500 yards, Miss M. Woodbridge, Detroit A. C.; 100 yards, breast stroke, Ruth Smith, New York

City; fancy dive, Thelma Payne, Multnomah A. C., Portland, Ore.

Yale won the intercollegiate title with Pennsylvania second and Princeton third.

SWINE. See LIVE STOCK.

SWITZERLAND. A federal republic of central Europe comprising within its limits the highest of the Alps and the Jura mountains: divided into twenty-two cantons of which three are in turn divided into two demi-cantons each. The capital is Berne.

AREA AND POPULATION. The total area is 15,976 square miles; population at the census of Dec. 31, 1910, 3,741,971; estimated July 1, 1916, 3,937,000. In nineteen of the divisions the majority of the inhabitants spoke German; in five, French; and in one, Italian. In 1910 the number of German-speaking inhabitants were 2,594,298; French 793,264; and Italian 302,578. The emigration which from 1911 to 1915, had averaged 4,684 a year, totaled only 304 in 1918, owing chiefly to the difficulties in travel on account of the war. The estimated population of towns over 100,000 on Jan. 1, 1918, was as follows: Zürich, 212,200; Basel, 135,500; Geneva, 140,900; Berne, 112,200.

The table below shows population by cantons and population at the federal census of 1920 (provisional figures), as compared with the figures for 1910.

Cantons	1910	1920
Zurich	503,915	535,634
Berne	645,877	669,966
Lucerne	167,223	176,189
Uri	22,113	23,843
Schwyz	58,428	59,475
Obwalden	17,161	17,461
Nidwalden	13,788	13,966
Glarus	33,316	33,689
Zug	28,156	31,439
Fribourg	139,654	142,297
Solothurn	117,040	130,230
Basel-City	135,918	140,112
Basel-Country	76,488	82,033
Schaffhausen	46,097	50,238
Appenzell-Ext.	57,973	55,113
Appenzell-Int.	14,659	14,542
Saint Gall	302,896	294,028
Graubünden	117,069	118,263
Aargau	230,634	239,777
Thurgau	134,917	135,153
Tessin (Ticino)	156,166	153,457
Vaud	317,457	315,326
Valais	128,381	128,274
Neuchâtel	133,061	130,671
Geneva	154,906	170,332
Total	3,753,293	3,861,508

The provisional figures at the census of 1920 indicated only a slight increase in the urban population, and in the case of nine cities there was a decrease, their respective populations (1910 figures in parenthesis) being as follows: Saint Gall, 70,139 (76,121); Chaux-de-Fonds, 37,681 (37,766); Neuchâtel, 23,348 (23,896); Montreux, 17,520 (20,915); Hérisau, 15,015 (15,502); Vevey, 12,883 (14,061); Le Locle, 12,458 (12,762); Rorschach, 11,585 (12,687); and Bellinzona, 10,342 (10,742). The population of sixteen cities had increased, including Zürich, 207,444 (192,011); Geneva, 135,771 (123,732); Basel, 135,749 (132,577); Berne, 105,689 (92,285).

EDUCATION AND RELIGION. There are seven universities situated respectively at Basel, Zürich, Berne, Geneva, Fribourg, Lausanne and Neuchâtel. The largest of these is that of Zürich, which had a total of attendance in 1918 of

1,908, and the next is Berne, with a total attendance in the same year of 1870. No later figures are available for school attendance than those given in the 1918 YEAR BOOK. The Protestants according to the census of Dec. 1, 1910 numbered 2,107,814 and the Roman Catholics, 1,593,538.

PRODUCTION. In respect to cultivation, the soil is divided as follows: Unproductive 4175 square miles; forest 3389; Alpine pasture land 3069; wild grass 2684; cultivated grass 719; cereals 758; and other crops 1074; vineyards 108. The forest land is mainly owned by the cantons and the municipalities. The agricultural census of 1917 showed that 432,282 persons were engaged in agriculture. In 1919 the wheat crop amounted to 105,900 tons; rye 41,500; oats, 42,000; potatoes 528,000. The annual census of April, 1920, gave the live stock as follows: Cattle 1,381,895; swine 545,306; goats 333,278; sheep 237,849; and horses 129,465. (See AGRICULTURE.) Salt mining is an important industry. From the five salt mine districts the output in 1918 was 800,953 quintals. The chief industrial centres and the principle articles manufactured in them are: Arbon, textile machinery and motor cars; Baden, electrical machinery; Basel, chemicals, machinery, and silk ribbons; Berne and Bienne, watch-making, and dairying; Cham, condensed milk; Geneva, jewelry, watches, and motor cars; Chaux-de-Fonds and Neuchâtel, watches, chocolate and motor cars; Lausanne and Vevay, chocolate; St. Gall, embroidery; Sileure, shoes and leather; Winterthur, machinery; Zürich, machinery, silk weaving, and bleaching. In 1917 and 1918 the industrial situation was largely affected by the war, Switzerland being surrounded by belligerent nations.

The following information is derived from the United States Bureau of Foreign and Domestic Commerce (1920): Raw materials were received only under restrictions and trade was seriously hampered. Industries also suffered from the fact that the mobilization of the Swiss army to preserve the neutrality of the Confederation had forcibly withdrawn from civil life practically half of the men employed in the industries. Switzerland is dependent on the outside world for sub-

stantially all the principal raw materials for manufacture, such as iron, copper, coal, oil, cotton, silk, rubber, chocolate, and leather. These raw materials had to be imported under guaranties exacted by the several belligerent powers as to the disposition to be made of the products manufactured therefrom or in exchange for Swiss products of prime necessity. The growing scarcity of manufactured products in the European countries created a brisk foreign demand for Swiss manufactured goods in those years and established a trading basis through which much of the raw materials necessary for Swiss home and export industries was made available. As a result the consolidated balance sheet of 203 of the principal industries of the country showed a net profit in 1917-18 of 12.16 per cent as compared with a net profit of 8.28 per cent for 197 corporations in 1912-13. The gross profit to share capital of the same industrial enterprises was in 1917-18, 58.72 per cent, and in 1912-13, 40.42 per cent; reserves to share capital in 1917-18, 23.48 per cent, and in 1912-13, 15.58 per cent. The years 1917 and 1918 were particularly prosperous ones for the chemical industry, the electro-metallurgical and electro-chemical industry (aluminum calcium carbide, etc.), the shoe and leather trade, the manufacturers of condensed milk, chocolate, and conserves. With the exception of the silk industry, textile industries in general, including the St. Gall embroidery industry, prospered as did also the watch-making industry and, to a less extent, the metallurgical industry. The railroads, mountain railroads, lake steamboat lines, and the hotels continued to suffer from the lack of tourist travel.

COMMERCE. Swiss export and import trade for 1917 and 1918 is compared with the last normal year of foreign commerce (1913) in the following figures: 1913, imports \$370,560,000 and exports \$265,568,000; 1917, imports \$464,192,874 and exports \$448,530,019; 1918, imports \$463,482,303 and exports \$378,892,075. Classified according to the three grand divisions, raw materials, manufactured products, and food products, the values of the imports and exports of the Confederation with the percentages of the total import and export trade represented by each division in 1917 and 1918 were as follows:

Groups	1917				1918			
	Imports		Exports		Imports		Exports	
	Value.	Per cent.	Value	Per cent.	Value	Per cent.	Value	Per cent.
Raw materials.....	\$218,047,840	45.9	\$48,175,776	10.7	\$206,888,531	44.6	\$16,047,710	4.3
Manufactured products.....	126,805,417	27.3	362,142,457	80.8	134,762,047	29.1	336,207,437	88.7
Food products.....	124,340,117	26.8	38,011,786	8.5	121,831,725	26.3	26,636,928	7.0
Total.....	\$464,192,874	100.0	\$448,330,019	100.0	\$468,482,303	100.0	\$378,892,075	100.0

The principal countries of origin for Swiss imports and of destination for Swiss exports with the value of merchandise imported from and exported to them are given below.

Countries	Imports from		Exports to	
	1917	1918	1917	1918
Germany	\$88,530,000	\$119,626,000	\$148,082,000	\$86,038,000
United States	87,910,000	68,123,000	23,060,000	19,093,000
France	58,950,000	54,154,000	88,971,000	89,770,000
United Kingdom	51,765,000	47,794,000	69,582,000	51,633,000
Italy	85,785,000	43,140,000	26,422,000	18,890,000
Austria	8,461,000	11,840,000	18,191,000	20,000,000
Argentina	15,940,000	10,155,000	4,170,000	3,618,000
Spain	16,525,000	30,124,000	10,120,000	10,463,000
Russia	67,000	50,000	9,780,000	1,030,000
Netherlands	2,367,000	4,246,000	7,320,000	10,170,000
British India	8,601,000	9,432,000	3,000,000	2,613,000
Egypt	4,438,000	4,419,000	1,713,000	2,400,000
Brazil	4,392,000	7,400,000	2,596,000	2,850,000
Dutch Indies	7,035,000	7,886,000	1,086,000	1,425,000
Canada	340,000	80,000	4,355,000	2,730,000

Countries	Imports from		Exports to	
	1917	1918	1917	1918
Sweden	3,765,000	6,145,000	10,310,000	9,661,000
Belgium	2,546,000	4,060,000	1,190,000	446,000
Australia	3,947,000	301,000	2,940,000	4,090,000
Japan	6,450,000	14,281,000	2,600,000	4,292,000
Rumania	241,000	793,000	620,000	201,000
Denmark	160,000	290,000	6,010,000	8,588,000

RAILWAYS. An important step in the gradual electrification of the government railway system of Switzerland was to be noted when \$25,000,000 of government of Switzerland 8 per cent bonds were offered in the United States, the entire proceeds to be spent in America with this single object. Switzerland was stated to have 2,700,000 horse power in water power resources, which with provisions for control at the headwaters might be increased to 8,000,000, and it was the aim of the railway engineers to provide hydro-electric installations for its development as rapidly as possible and use it on lines of the government system. In 1920 there was a total of 3300 miles of railway in Switzerland, of which 1900 miles were owned by the Swiss Confederation and the total cost of electrifying the latter was estimated roughly at \$200,000,000. These government lines include the principal arteries of the Swiss railway system. Of the 1400 miles owned by private companies, 622 miles in 1920 already were electrically operated, but only two of the important federal standard gage lines had been electrified. The first was the line from Berne to Thun, a distance of about 20 miles, opened for operation in May, 1919, to connect with the privately-owned Berne-Lötschberg-Simplon Railway with trains hauled by electric locomotives direct from Berne to Brig. From 5 to 7 through passenger trains and 3 freight trains are operated each way per day over this line.

The second Federal line to be electrified was the line from Erstfeld to Bellinzona, a distance of 68 miles. The electrification of this line approved in 1913, by 1920 was practically completed at an estimated cost of about \$8,000,000. This section handles a large amount of traffic with Italy and 28 per cent of its length consists of tunnels and a grade of 2.5 to 2.7 per cent for 25 miles. It was planned to extend the electrification of this line from Bellinzona to Chiasso and from Erstfeld to Luzerne. These lines would be supplied with power from the plants at Amsteg and Ritom, the former with a prospective capacity of 26,000 horsepower and the latter with 32,000 horsepower output, which would take care of traffic increases of 60 to 70 per cent on the original plans.

The Federal lines were designed to operate on 15,000 volts, low frequency, single phase current, from an overhead wire and four locomotives were placed in service in 1919, built for this purpose by two manufacturers, each of whom supplied a passenger and a freight locomotive.

Among other new projects approved during the year by the board of administration of the Federal railways was the new Ulmberg tunnel on the line on the left bank of Lake Zürich and the construction of the foundation walls near Steinen, as well as the electrification of the Sion-Lausanne line. A credit of 40,000,000 Swiss francs was voted for these purposes.

In Switzerland as elsewhere in Europe the deficits had increased in railway operation being \$41,510,000 in 1918 as compared to \$14,355,000 in 1917, labor, pensions, supplies and most of all coal showing marked increases in 1918.

The general tendency throughout Europe to shorten the working day found expression in a measure for an eight-hour day for the employees of the Swiss railway, postal, telegraph and telephone services which was carried on a referendum by 360,000 votes to 271,000, 67 per cent of the electors voting.

A somewhat revolutionary idea in railway operation was the suggestion made in connection with the proposed reconstruction of the Swiss public services for the unification of the staff of the state railways with the staff of the federal post and telegraph offices. In other words the station-masters in smaller places would become the heads of the local post and telegraph offices, while the trainmen of local trains would look after the mail bags.

FINANCE. Expenditures for the year 1921 were estimated at 523,000,000 francs, an increase of 120,000,000 francs over 1920. Receipts for 1921 were estimated at 358,000,000 francs, an increase of 79,000,000 francs over 1920. The prospective deficit, therefore, with which the government was faced for the year of 1921 amounted to 165,000,000, greater by 40,000,000 than the budget deficit for 1920. The proposed increase in the annual expenses was due largely to estimated increases of 53,000,000 francs in the national railway and postal departments, of 27,000,000 for military purposes, and of 16,000,000 in the cost of carrying the national debt. Proposals for increasing the revenue included a provisional increase in the domestic and foreign postal rates, pending a definite revision of rates as a result of the International Postal Union (q.v.) conference at Madrid; and further increases in the customs tariff, placing an ad valorem tax on different articles, especially those classed as "de luxe." It was also proposed to levy a tax on coupons, which was expected to yield some 20,000,000 francs. The state railway budget for 1921, carrying a deficit of 48,488,000 francs was passed. This placed the total railway deficit since 1914 at 278,000,000 francs.

A conference of expert financiers and of members of the financial committees of the two houses of the Federal Assembly was held at Kandersteg near the beginning of September for the purpose of devising means for meeting the country's financial difficulties. Official figures laid before it showed that at the end of 1913 the net financial assets of the Confederation amounted to 100,000,000 Swiss francs (1 franc=19.3 cents at par) as compared with a net deficit of about 1,100,000,000 francs at the end of 1919, to which should be added the 150,000,000 deficit for 1920.

The chief items in this deficit were as follows:

	Francs
Mobilization	1,220,000,000
State's loss by selling milk, wheat, etc., at reduced prices	168,000,000
Deficits from 1913 to 1919	267,000,000
Total	1,655,000,000

From this was to be deducted: War tax, 100,000,000 francs; amount from military exemption, 500,000,000 francs; total, 600,000,000 francs.

This made a net deficit of 1,055,000,000 francs. The interest and amortization on 1,055,000,000 francs required from 50,000,000 to 60,000,000 francs.

HISTORY. A referendum was held on the question of joining the League of Nations May 15-16. The popular vote was 400,000 against 300,000; the vote by cantons was 11½ for and 10½ against, the greatest majority in favor of membership being in the canton of Vaud (61,000 to 4,000). In the German-speaking cantons, the majority in opposition was 10,000. In the autumn, the federal parliament began its opening session with a discussion of a housing bill, the shortage of houses having become alarming in Switzerland as in other countries. The Socialists favored a measure for the determination of all available housing space and for compelling owners to rent premises not permanently used, but this was voted down by a large majority on the ground that such a step would merely result in discouraging building. The executive of the Swiss Social Democratic party decided against adherence to the Third International.

SYMONS, THOMAS WILLIAM. Military officer and engineer, died at Washington, D. C., November 23. His engineering work, especially that on canals, lighthouses and breakwaters placed him among the leading engineers of the army. He was born at Keesville, N. Y. Feb. 7, 1849 and graduated at the United States Military Academy in 1874. Down to 1899 when he retired from the service, he was engaged on civil and military engineering works in Washington, D. C., Oregon, California and other States of the Far West, and on the Great Lakes. After 1898 he devoted his attention to the building of the New York State canals. He constructed the largest breakwater in the world at Buffalo, N. Y. He served on the Canal Advisory Board and was consulting engineer on canals in the State of New York. He had previously had charge of the United States lighthouses from Detroit, Mich. to Ogdensburgh, N. Y., and had been for some time superintendent of public buildings and grounds and military aid to the President.

SYRACUSE, N. Y. See GARBAGE.

SYRACUSE. UNIVERSITY OF. A non-sectarian co-educational institution of the higher learning at Syracuse, N. Y., founded in 1870. The enrollment for the summer session of 1920 was 610 of whom 324 were women. There were 807 registered in the evening session and in the regular fall session of 1920 there were 4630 students, allowing for duplicates. The faculty numbered 450. There were 106,500 volumes in the library. President, James R. Day, LL.D., LL.H.D.

SYRIA. A country of Asia Minor, whose boundaries were still undetermined at the close of 1920, comprising the portion of Asiatic Turkey which lies between the Euphrates River and the Syrian desert on the east and the Mediterranean Sea on the west, and extending from the Alma Dag Mountains on the north to Egypt on the south. The boundaries under consideration in 1920 included an area of about 106,740 square miles and a population of about 3,133,500, that is to say, the northern part of Syria of the division known as Syria under Turkish rule, including the vilayets of Syria, Beirut, Zor and Aleppo. The chief towns with their estimated populations are: Damascus, 250,000; Aleppo, 250,000; Beirut, 150,000; Homs, 70,000; Hama,

60,000. The treaty with Turkey recognized the independence of Syria under a mandatory power and the Supreme Council designated France for the mandate. The Emir Feisal was proclaimed king of Syria, March 11, 1920. He was not recognized by the Allies and was finally driven out by the French as noted below.

THE EMIR FEISAL. As noted under the WAR OF THE NATIONS, the San Remo conference resulted in bestowing on France the mandate for Syria and on Great Britain the mandates for Mesopotamia and Palestine. This decision disregarded the claims of the Emir Feisal (or Faisal), the son of Hussein, king of the Hejaz, and the leader of a body of Arab nationalists who were believed to aim at the establishment of a great Arab empire (see preceding YEAR BOOK). He was thought at first to be under the protection or at least acting by the advice of British authorities. His aim appeared to be to constitute an independent Arab kingdom with its capital at Damascus, but it was said that his father disapproved this policy. Different interpretations of Faisal's movements were given according to the sympathy of the narrator with British or French designs. By French writers he was said to have recourse to a few fanatical malcontents who dreamt of a pan-Arabic empire and who hated the French. They accused him of entirely disregarding French rights in Syria, and of pursuing a policy of petty aggression, as shown by the arrests of certain friends of France and by an attempt to prevent the French from using the railway from Aleppo. They referred to him as an upstart, acting without any mandate and said that he systematically endeavored to discredit France among the people of Syria and the Libanus, that he had by money and promises stirred up the people against the French, and that forces commanded by his officers had by occupying the railway in the north of Syria retarded the sending of French aid to their garrisons of Cilicia. In July, it was announced that General Gouraud had sent an ultimatum to Faisal ordering him to cease his manoeuvres against France. According to British despatches on the subject this ultimatum commanded the Emir to recognize the mandate of France and the official use of the French language and of French money in Syria. According to French despatches the ultimatum consisted merely in the demand above-mentioned. When no reply was received French troops took possession of the railway. By July 31, Faisal had been set aside and had left the country and the French were in possession of the cities of Aleppo and Damascus. They set up a government under French protection in the Libanus which was to administer the western part of Syria.

THE FRENCH IN SYRIA. In September, General Gouraud, French high commissioner for Syria, believing order restored over the greater part of the Cilician plain decided to cease offensive operations. He thereupon proceeded with measures of economic restoration which toward the close of the year were reported to have had good results. The railway system linking Beirut with the chief cities of the interior was repaired; a French bank was established and many industrial, economical and financial bodies were organized. French capital appeared to be finding investment there in considerable amounts. At the close of the year considerable progress was indicated in the reconstruction of postal and transport services, and in public education. The

French movement for economic exploitation had been gathering strength for two years. It received an impetus at the French Congress of Syria held at Marseilles, January 3-4, 1919, which recommended a number of important measures of reconstruction, including creation or improvement of means of transportation, protection of the cotton interests of the French in Syria, freedom of trade in Syrian products and promotion of exports, improvement of Syrian commercial legislation. This programme had already been partly carried out. Before the war French exports into Syria were placed at about 8,000,000 francs. The French demand included silk cocoons, silks, gums, cereals, eggs, fruits, olive oil, and skins; and the French exports included silk goods, machinery, jewelry, chemical products, drugs, sugar, glassware, cement, porcelain, hardware, etc. The French congratulated themselves that the Germans whom the Turks had favored were completely driven out, and that it was evident that French articles would be preferred to all others. In these descriptions of Syria, the Syrians were always described as faithful to the French tradition and as preferring France to any other country in the world. In French accounts the country was described as a French protectorate faithful to the French interest in spite of all its vicissitudes. In British accounts and in accounts by neutral persons on the other hand, it was frequently said that the Syrians were bitterly opposed to French control.

THE QUESTION OF OCCUPATION. An agreement on the part of France, Great Britain, and Italy, in regard to the safeguarding of their respective spheres within the former Turkish empire was formed when the Treaty of Sèvres was drafted but not made public till November. One of its features was the provision that each Power should retain its troops in the region under its control so long as they were required for the protection of racial minorities, until the Treaty of Sèvres went into force. General Gouraud's change of military policy involved the disarmament of a body of Americans who had been trained under French officers, and which was on the point of going to the aid of compatriots in the Cilician Taurus threatened by the Turks. Armenian refugees from Anatolia were ordered to leave Cilicia and upon their refusal some thousands were deported into French territory. According to the French Armenian squatters were keeping the rightful Turkish possessors from their lands. Armenian sources blamed the French for preventing the relief of the Armenians in the Taurus where the town of Hadjin which had been under siege was captured by the Turkish Nationalists and a massacre of 10,000 Armenians reported. The Armenians were informed by French authorities that as the military would eventually be withdrawn from the region it was occupying they must choose between accepting Turkish rule there in the future and leaving the country. There were other instances of a conciliatory policy on the part of the French toward the Turkish Nationalists and this became more marked after the downfall of Venizelos and the return of ex-king Constantine to Greece (q.v.). In the close of the year General Gouraud was in Paris giving evidence before the Senate committee of foreign affairs, and other committees in regard to conditions in Syria. It appeared from these discus-

sions that Cilicia would be evacuated as soon as a satisfactory peace could be obtained with the Turkish Nationalists, but that France would retain her commercial interest there. In respect to Syria, President Millerand declared, "France will occupy all of it and always." General Gouraud said the pacification of Syria had already been virtually achieved and that of Cilicia would follow. He argued that both for political and for economic reasons France must retain its hold on Syria.

PALESTINE. In the autumn the executive office of the Zionists in London issued a request to the Jews of the world to aid in establishing the Jewish national seat of Palestine, and decided to raise a loan of \$12,500,000 to be negotiated either through the British government or the Palestine administration and to be floated by London and New York bankers. The High Commissioner of Palestine, Sir Herbert Samuel, who had been sent out to organize the administration, appointed his advisory council, October 1. On October 11 the Jewish National Assembly met at Jerusalem with two hundred delegates, but the orthodox element refused to take part on the ground that the decisions of the assembly would not be binding on the Jews of Palestine. Toward the close of the year Jewish immigrants were arriving at the rate of about 1000 a month, and it was reported that over 200,000 were on the way, chiefly from southern Russia. Measures were taken by the High Commissioner in December for the organization by the aid of English, American and Egyptian financiers of a system of credit banks in the country. At the end of the year a campaign was going on among the Jews of the world for the raising of a fund of £25,000,000 for the restoration of Palestine. See **ARCHAEOLOGY**.

TAFTE, THOMAS. Roman Catholic priest, died at Brooklyn, N. Y., December 1. He had been for forty-seven years rector of St. Patrick's Church in Brooklyn. He was born in 1833; ordained in 1863 and thereafter administered in Brooklyn, where he was one of the best known and most beloved of the city's priests.

TAHITI. See **FRENCH ESTABLISHMENTS IN OCEANIA**.

TAIWAN. Official name of Formosa (q.v.).

TALBERT, JOSEPH TRUITT. Banker, died, May 8. He was born at Hardy, Miss., August 15, 1866; studied at the University of Mississippi, and went into the banking business. He was national bank examiner in the West and Southwest in 1894-97. After 1909 he was vice-president of the National City Bank in New York City. After 1906 he was a member of the Currency Commission of the American Banking Association. In politics he was a Republican.

TAMBURINI, K. See **PSYCHICAL RESEARCH**.

TARBELL, FRANK BIGLOW. Archaeologist, died at New Haven, Conn., December 4. He was born at Groton, Mass., January 1, 1853; graduated at Yale in 1873 and was assistant and later professor of the school of classical studies at Athens and then entered the classical department at Harvard as associate professor of Greek. From 1894 he was professor of classical archaeology at the University of Chicago. Among his texts may be mentioned the *Philippics of Demosthenes* and a *History of Greek Art* (1896).

TARIFF. A so-called Emergency Tariff measure was introduced in the House of Representatives by Mr. Fordney of Michigan, imposing temporary duties upon certain agricultural



GENERAL SIR E. H. ALLENBY



Courtesy Review of Reviews

GENERAL GOURAUD



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EMIR FEIZAL

MEN PROMINENT IN THE NEAR EAST DURING 1920

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products to meet present emergencies, to provide revenue, and for other purposes. Its provisions were summarized by the United States Chamber of Commerce as follows:

The bill provides duties which would become effective on the day following its enactment into law and remain in effect for ten months thereafter. The duties provided, except as to manufactures of cotton, and of wool and hair, advanced in manufacture beyond being washed or scoured, would be in lieu of those now provided for the period proposed.

These duties are as follows: wheat, 35c bu., flaxseed, 30c bu. (56 lbs.), wheat flour and semolina, 20%, corn or maize 15c bu., beans 2c lb., peanuts or ground beans, 3c lb., potatoes 25c bu. (60 lbs.), onions, 40c bu. (57 lbs.), rice, cleaned, 2c, where used in manufacture of canned foods, 1c, uncleaned 1½c, broken, and rice flour and meal, ¼c, rice paddy, ¾c, lemons, 2c; peanut oil, 26c gal., cottonseed, coconut and soya bean oil, 20c gal., olive oil, 40c gal. in bulk, 50c in containers of less than 5 gallons; cattle 30%, sheep, 1 yr. or over, \$2, less than 1 yr. \$1, fresh or frozen beef, veal, mutton, lamb or pork, 2c; prepared or preserved meats n. s. p. f., 25%; cattle, sheep and other stock imported for breeding purposes, free; cotton, having staple 1½ inches or more, 7c lb., manufactures of which cotton of long staple, 1½ in., is component material of chief value, 7c lb. in addition to rates now in effect; wool (except carpet wools), unwashed, 15, washed, 30c, scoured, 45c. When sorted or increased in value by rejection of any part of original fleece the duty would be doubled, but not more than 45c lb. Any of the foregoing when advanced by manufacture would be dutiable at 45c pound in addition to duties now applicable. Sugar, tank bottoms, sirups of cane, sirups of cane juice, etc., not over 75 degrees by polariscope tests, \$1.16 per 100 pounds, with 4/100 of a cent per pound additional for every degree over 75; molasses not over 40 degrees, 24%, over 40 degrees and not over 56 degrees 3½c per gallon; above 56 degrees, 7 cents per gallon; sugar drainings and sweepings would be dutiable as molasses or sugar as determined by polariscope test. Butter, and substitutes therefor, would be dutiable at 6c per pound, cheese, and substitutes, 23%, fresh milk 2c per gallon, cream, 5c per gallon, preserved or condensed milk (including weight of immediate covering) 2c per pound, sugar of milk, 5c per pound, wrapper tobacco and filler (containing more than 15% wrapper) unstemmed \$3.35 per pound, stemmed, \$3.00 per pound, filler, n. s. p. f. unstemmed, 35c per pound, stemmed, 50c pound; apples, 30c bu., cherries 3c per pound, olives in solution, 25c gal., not in solution, 3c lb. The bill passed the House, December 22. It was the subject of much criticism and a sharp discussion of it was beginning at the close of the year.

TARIFF COMMISSION. The Commission renewed its recommendations on the subjects of interim revenue legislation, foreign trade zones, "dumping" and unfair foreign competition, and reciprocity and commercial treaties (see preceding YEAR BOOK). It continued during the fiscal year the publication of reports on Tariff policies for dependent colonies, parts of which had already appeared, and it completed or nearly completed the digest of commercial treaties and the reports on Canadian reciprocity and on the

wool-growing industry throughout the world. Among the investigations that it had in hand were: Special or preferential transportation rates of railroads in this country and abroad; abnormal conditions in certain mineral industries since the war; silk production and manufacture in Europe; wool manufacture in Great Britain; British metal and chemical industries; industrial conditions in Japan; the American lumber industry; Agriculture staples and the tariff; flax, hemp, jute and their manufactures; the fish industries; the wool carpet and rug industry; silk and silk manufactures and the tariff. Surveys on a variety of subjects were completed, including print paper and other materials of book manufacture; cotton cloth in relation to the tariff; refined sugar; costs of product in the dye industry; the incandescent mantle industry; the crude botanical drug industry; barytes, barium chemical, and lithopone industries. Mr. William Kent resigned from the Commission, March 1, and the personnel at the close of the year was as follows: Chairman, Thomas Walker Page; other members, David J. Lewis, William S. Culbertson, Edward P. Costigan; secretary, John F. Bethune.

TARLETON, FRANCIS ALEXANDER. British scientist, died, June 19. He was professor of natural philosophy in the University of Dublin. He was born in Ireland, April 28, 1841; educated at Trinity College, Dublin, where he graduated with high honors. He wrote an *Introduction to the Medical Theory of Attraction* (1899, vol. 2 1913); *A Treatise on Dynamics* (with Dr. Williamson; 3d ed. 1900).

TASMANIA. A state in the Commonwealth of Australia, consisting of the island of Tasmania and several small islands. Area including Macquarie, 26,216 square miles; estimated population, June 30, 1919, 210,881, as compared with (1911) 191,211. Capital, Hobart, with an estimated population, Jan. 1, 1918, of 40,352. Imports, 1918-19, £608,786; exports, £1,002,093. The budget for 1918-19 was: Revenue, £1,581,984; expenditure, £1,644,512. The debt in 1919 was £15,281,281. The railway mileage was 747, of which 587 was state owned. The executive power is in a governor or administrator appointed by the crown and the legislative power in a legislative council and house of assembly, elected for six years and three years respectively. Governor in 1920, Sir W. L. Allardyce; prime minister, Sir W. H. Lee. See AUSTRALIA.

TAYLOR, HOWARD. Lawyer, died in New York City, November 26. He was born in New York City in 1865; graduated at Harvard, 1886; began his law practice in New York City in 1888, where he became the head of the law firm of Taylor, Jackson, Brophy and Nash. He was counsel for the New York World.

TEACHER SCARCITY. See EDUCATION IN THE UNITED STATES.

TELEPHONY. The year was notable for a constantly increasing demand for telephone service and considerable difficulty in supplying these demands of the public for service. There were several causes for the latter condition. At the beginning of the year the telephone companies were far behind in meeting requests for service because they were but just recovering from the war period, during which development work and manufacture of apparatus for public use had almost ceased. Some time was required, there-

fore, to recover from this and get back to a more normal condition. Furthermore, in many localities the cost of extensions and improvements involved in furnishing service to new subscribers was so great that under the prevailing rates the companies were unable to complete their plans of development as fast as was desirable or necessary.

In New York City the results of preparations that had been made for furnishing more and better service to subscribers fell short of what had been intended, for the reason that the prevailing low rates for service were gradually but surely forcing the operating company into a position where a deficit was incurred. The New York Telephone Co., during the month of November, for instance, reported that toll and exchange revenues were \$4,181,000 in addition to \$92,000 received from outside investments, but the operating expenses during that month amounted to \$4,325,477. It was stated that at the end of the year there were 90,000 unfilled applications for telephone service in New York City alone, and the outlook for supplying them was not encouraging. In spite of the financial handicap, the company completed and put into use several new central stations and was actively prosecuting the work of installing the "machine switching" system. This was intended to dispense with a considerable number of operators at central offices and involved the use of dialing instruments for sub-

TENNESSEE. POPULATION. According to the preliminary report of the census of 1920, there were 2,337,885 residents in the State, January 1, 1920, as compared with 2,184,789 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 252,691, an increase of 2.7 per cent since 1910. The following table is compiled from the estimates of the United States Department of Agriculture for the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	3,325,000	93,100,000	\$80,997,000
	1919	3,300,000	70,620,000	110,873,000
Oats	1920	350,000	8,225,000	6,416,000
	1919	300,000	6,600,000	6,138,000
Wheat	1920	424,000	4,028,000	7,855,000
	1919	700,000	6,650,000	14,763,000
Tobacco	1920	117,000	*85,410,000	17,082,000
	1919	138,000	*111,780,000	28,057,000
Hay	1920	1,470,000	*2,050,000	41,915,000
	1919	1,340,000	*1,781,000	48,014,000
Potatoes	1920	43,000	3,569,000	5,710,000
	1919	45,000	2,970,000	5,108,000
S't Potatoes	1920	42,000	4,284,000	5,269,000
	1919	40,000	4,400,000	5,148,000
S'g'm Sirup	1920	20,000	*1,800,000	1,818,000
	1919	18,000	*1,566,000	1,644,000
Cotton	1920	824,000	*310,000	20,150,000
	1919	758,000	*310,000	51,932,000

* Pounds. * Bales. * Tons. * Gallons.

DRAINAGE. Statistics of drainage for Tennessee were for the first time provided by the census of 1920. The chief points are presented in the following table:

SUMMARY FOR THE STATE—1920			
Item		Amount	Per cent. of total
DRAINAGE ON FARMS			
Number of all farms in the state		252,774	100.0
Farms reporting land having drainage		8,887	3.5
Farms reporting land needing drainage		20,997	8.3
All land in farms	acres	19,510,856	100.0
Improved land in farms	acres	11,185,302	57.3
Farm land reported as provided with drainage	acres	254,118	1.3
Farm land reported as needing drainage	acres	640,479	3.3
DRAINAGE ENTERPRISES			
Approximate land area of the state	acres	26,679,680	100.0
All land in operating drainage enterprises	acres	363,671	1.4
Improved land	acres	163,218	0.6
Timber and cut-over land	acres	189,945	0.7
Other unimproved land	acres	10,508	1
Capital invested in and required for completion of operating enterprises		\$3,447,991	100.0
Capital invested in these enterprises to Dec. 31, 1919		2,925,944	84.9
Additional capital required to complete these enterprises		522,047	15.1

¹ Less than one-tenth of 1 per cent.

scribers. It was expected that one or more exchanges would be so far equipped with the new apparatus early in 1921 that they would go into regular service early in the summer. In spite of continued difficulty in securing and training women for the position of operator, and of holding them for more than a brief period, the quality and reliability of service improved during the year.

TEMPLE UNIVERSITY. A co-educational institution of higher learning supported by the State. It is located at Philadelphia, Pa., and was founded in 1884. There were 361 students enrolled in the summer session of 1920 and in the regular fall session there were 6490 students enrolled allowing for duplicates. The faculty numbered 345. The total income for the year was \$538,097. There were 14,557 volumes in the library. Gifts totaling about \$100,000 were received toward a new building; pledges were made amounting to \$200,000 or more. The president was Russel H. Conwell, D.D., LL.D.

The drainage enterprises in the State lie almost entirely west of the Tennessee River. Most of them are drained through the smaller tributaries of the Mississippi River—namely, Obion River, Forked Deer River, and Hatchee River; some are drained through Big Sandy River, Beech River, and a few of the creeks entering the Tennessee River. All of them are public corporations organized under the general drainage district law of the State, approved April 28, 1909 (ch. 185). The statute applies to the whole State except Reelfoot Lake. The total works completed to December 31, 1919, comprised 777.3 miles of open ditches, 0.3 mile of tile drains, and 42.3 miles of accessory levees; the additional lengths under construction were 135.4 miles of open ditches, 0.1 mile of tile drains, and 10.2 miles of levees. These figures do not include drains or levees installed by individual farm owners supplemental to the works of the enterprises, nor the works of flood-protection or levee districts that had not undertaken the construction of ditches or tile drains.

The principal crops grown upon the drained land in drainage enterprises are corn and cotton.

EDUCATION. In 1920 the school population was 815,436; number of pupils enrolled, 619,852; average number in daily attendance, 453,503; number of teachers, 13,277. The average annual salaries of teachers in the respective groups of schools were as follows: County elementary teachers (white), \$348; (colored), \$271; city elementary teachers (white), \$607; (colored), \$434; county high school teachers (white), \$861; (colored), \$619; city high school teachers (white), \$629; (colored), 732.

ELECTION. The vote in the presidential election of 1920 was: Harding (Republican), 219,829; Cox (Democrat), 206,558; Debs (Socialist); 2239; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 153,282; Hughes (Republican), 116,223; Benson (Socialist), 12,542. The vote for governor was: Taylor (Republican), 229,463; Roberts (Democrat), 182,836.

OFFICERS: Governor, A. H. Roberts; Secretary of State, Ike B. Stevens; Treasurer, Hill McAlister; John B. Thomasson.

JUDICIARY. Supreme Court: Chief Justice, D. L. Lamsden; Associate Justices, Grafton Green, Frank P. Hall, Collin P. McKinney, Nathan L. Bachman.

TENNESSEE, UNIVERSITY OF. A non-sectarian, co-educational institution of higher education at Knoxville, Tenn., founded in 1794. There were 1109 students enrolled in 1920. The faculty numbered 308. There were 42,000 volumes in the library. President, Harcourt A. Morgan, LL. D.

TENNIS. The tennis season of 1920 was the most remarkable the sport has experienced since the world war, the United States court stars emerging from the many tournaments held throughout America, Europe and Australasia with a long series of victories that stamped them superior to all rivals. The most signal triumph of the United States was the capture of the Davis Cup, emblematic of the world's championship. This trophy returns to America as the result of the marvelous playing of William T. Tilden, 2nd., and William M. Johnston, who overwhelmed the teams representing England and France in the preliminary matches and then made a clean sweep in the finals with Norman Everard Brookes and Gerald L. Patterson as their opponents.

Among the women players Mademoiselle Suzanne Lenglen of France, Mrs. Lambert-Chambers of England and Mrs. Molla Bjurstedt Mallory of the United States were the outstanding figures. Mlle. Lenglen proved the greatest of these three and was crowned world's champion. See OLYMPIC GAMES.

A summary of the Davis Cup matches held during the year follows:

United States vs. England at Eastbourne, England, men's singles, William M. Johnston, U. S., defeated J. C. Parke, England, 6-4, 6-4, 2-6, 3-6, 6-2; William T. Tilden, 2d., U. S., defeated A. R. F. Kingscote, England, 4-6, 6-1, 6-3, 6-1; Johnston, U. S., defeated Kingscote, England, 6-3, 4-6, 3-6, 6-4, 7-5; Tilden, U. S., defeated Parke, England, 6-2, 3-6, 7-5, 3-6, 7-5; men's doubles, Tilden and Johnston, U. S., defeated Parke and Kingscote, England, 8-6, 4-6, 4-6, 6-3, 6-2.

United States vs. France at Eastbourne, Eng-

land, men's singles, Johnston, U. S., defeated Andre H. Gobert, France, 6-3, 8-6, 6-3; Tilden, U. S., defeated William H. Laurentz, France, 4-6, 6-2, 6-1, 6-3; men's doubles, Tilden and Johnston, U. S., defeated Gobert and Laurentz, France, 6-2, 6-3, 6-2.

United States vs. Australasia, at Auckland, New Zealand, men's singles. Tilden, U. S., defeated Norman Everard Brookes, Australasia, 10-8, 6-4, 1-6, 6-4; Johnston, U. S., defeated Gerald L. Patterson, Australasia, 6-3, 6-1, 6-1; Tilden, U. S., defeated Patterson, Australasia, 5-7, 6-2, 6-3, 6-3; Johnston, U. S., defeated Brookes, Australasia, 5-7, 7-5, 6-3, 6-3; men's doubles, Tilden and Johnston, U. S., defeated Brookes and Patterson, Australasia, 4-6, 6-4, 6-0, 6-4.

The principal tournaments held in the United States during 1920 resulted as follows:

National Singles Championship, Forest Hills, L. I., final round, William T. Tilden, 2d., of Philadelphia, defeated William M. Johnston, of California, 6-1, 1-6, 7-5, 5-7, 6-3.

National Doubles Championship, Longwood Cricket Club, Boston, Mass., final round, William M. Johnston and C. J. Griffin defeated Willis E. Davis and Roland Roberts 6-2, 6-2, 6-3.

National Clay Court Singles Championship, Chicago, Ill., final round, Roland Roberts defeated Vincent Richards 6-3, 6-1, 6-3.

National Clay Court Doubles Championship, final round, Roberts and Richards defeated Walter T. Hayes and Ralph Burdick 6-2, 6-2, 7-6.

Women's National Championship, Philadelphia, singles, final round, Mrs. Molla Bjurstedt Mallory defeated Miss Marion Zinderstein, 6-3, 6-1; doubles, Miss Zinderstein and Miss Eleanor Goes defeated Miss Helen Baker and Miss Eleanor Tennant 13-11, 4-6, 6-3.

Junior Championship, Forest Hills, singles, final round, Vincent Richards defeated W. W. Ingraham 6-2, 6-4, 6-1; doubles, Harold Godshall and Richard Hinckley defeated W. W. Ingraham and Arnold W. Jones 4-6, 6-3, 4-6, 7-5, 6-4.

Boys' Championship, Forest Hills, singles, final round, James L. Farquhar defeated William Einsmann 7-5, 6-1; doubles, C. V. de Biaso and James L. Farquhar defeated William Einsmann and Greville Acker 6-3, 6-2.

National Indoor Championship, New York City, singles, final round, William T. Tilden, 2nd., defeated Vincent Richards 10-8, 6-3, 6-1; doubles, Tilden and Richards defeated Samuel Hardy and S. Howard Voshell 6-3, 3-6, 6-4, 12-10.

Women's Indoor National Championship, New York City, singles, final round, Miss Helene Pollak defeated Miss Edith Sigourney 8-6, 6-2; doubles, Miss Pollak and Mrs. L. G. Morris defeated Miss Coroma Winn and Mrs. G. Della Torre 6-2, 6-4.

National Girls' Championship, Philadelphia, singles, final round, Miss Louise Dixon defeated Miss Helen Sewell 3-6, 6-3, 6-2; doubles, Miss Sewell and Miss V. L. Carpenter defeated Miss Ceres Baker and Miss Martha Bayard 6-4, 6-3.

The intercollegiate championship was won by Yale University.

TESCHNER-TAS, HELEN. See MUSIC, Artists, Instrumentalists.

TEXAS. POPULATION. According to the preliminary report of the census of 1920, there were 4,663,228 residents in the state, January 1, 1920, as compared with 3,896,542 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 435,666, an increase of 4.3 per cent since 1910. The following table was compiled from the estimates of the United States Department of Agriculture, for the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	6,700,000	174,200,000	\$146,328,000
	1919	6,500,000	195,000,000	230,100,000
Wheat	1920	1,225,000	15,925,000	27,391,000
	1919	2,045,000	33,742,000	67,484,000
Oats	1920	1,575,000	44,100,000	29,106,000
	1919	2,250,000	94,500,000	60,484,000
Broom Corn	1920	33,000	3,800	448,000
	1919	58,000	10,800	1,512,000
Hay	1920	865,000	1,315,000	17,978,000
	1919	876,000	1,526,000	27,388,000
Peanuts	1920	184,000	4,784,000	8,653,000
	1919	222,000	5,550,000	13,209,000
Rice	1920	281,000	9,554,000	11,942,000
	1919	218,000	6,998,000	19,594,000
Potatoes	1920	45,000	2,340,000	5,148,000
	1919	53,000	3,796,000	7,972,000
S't Potatoes	1920	89,000	9,345,000	12,148,000
	1919	95,000	10,450,000	15,675,000
S'g'm Sirup	1920	7,900	743,000	780,000
	1919	8,800	598,000	610,000
Cowpeas	1920	65,000	715,000	2,088,000
	1919	90,000	890,000	2,772,000
Cotton	1920	12,576,000	4,200,000	277,200,000
	1919	10,476,000	3,099,000	542,319,000
Grain S'g'm	1920	1,906,000	60,992,000	73,800,000
	1919	1,798,000	59,334,000	65,267,000

^b Bales. ^c Tons. ^d Gallons.

MINERAL PRODUCTION. The Presidio silver mine, at Shafter, Texas, was in continuous operation during the year 1920, according to the United States Geological Survey. Small shipments of copper and lead ores were made from the Van Horn and Sierra Blanca districts. The metal production for the State for the year was 520,000 ounces of silver and small quantities of gold, lead, and copper.

ELECTIONS. The vote in the presidential election of 1920 was: Cox (Democrat), 289,688; Harding (Republican), 115,640; Ferguson (American), 47,669; Independent Republican, 27,515; Debs (Socialist), 8194; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 286,514; Hughes (Republican), 64,999; Benson (Socialist), 18,969.

TEXAS, UNIVERSITY OF. A co-educational State institution at Austin, Texas, founded in 1881. The main university is at Austin but the medical branch is at Galveston, and the College of Mines is at El Paso. The enrolment for the summer session of 1920 was 1955 and for the regular fall session it was 3802. There were 234 members in the faculty. The endowment consisted of 2,000,000 acres of land. The income for the year was \$425,000. There were 152,072 volumes in the library. President, Robert Ernest Vinson, D.D. LL.D.

TEXAS FEVER. See VETERINARY MEDICINE.

TEXTILE MANUFACTURING. No industry in the United States ever experienced a wider range of conditions than did that concerned with the manufacture and distribution of textiles in the year 1920. Starting with the continued inflation of the previous year and together with scarcity of machinery, labor and raw material, and an active demand at high prices there was a steady deflation accompanied by many types

of commercial disorder, most of which were weathered successfully, though they often meant large losses. The full effects of the wave of economy which was the popular reaction to the high prices of 1919 were manifested in what was termed a buyers' strike, and with retail customers failing to take goods, and demands fading away distributors and manufacturers alike were soon affected. Cancellation of orders, often when goods had been allotted under unusual or special conditions, straightway became general and mills and merchants were left with large stocks which customers refused or returned. This practice began about the middle of the year and reached dimensions never before encountered in the American textile trade. The wholesale clothing trade and the cloak and suit trade as well as the retail merchants repudiated many of their commitments, and as a result of this and other influences prices fell and merchandise failed to move. Naturally credits were curtailed and the production sources, namely, the mills, soon responded to conditions by closing down wholly or in part and reducing their output. In fact at the end of the year it was estimated that less than 50 per cent of the mills were operating to their capacity and in some cases were closed down entirely. Naturally such conditions also led to reduced wages, in many instances accepted as inevitable by the operators. It was realized that costs of living had not fallen materially but it was also believed that expenses everywhere must be reduced in order to keep plants operating. At New Bedford at the end of 1920 operators were receiving 108.9 per cent more in wages than in 1915 and even with a decrease of 22½ per cent, which was proposed for the New England cotton industry, the rate would still be 108.4 per cent higher than before the war. The entire wage question however was largely relative in view of the cost of living and the decreased purchasing power of the dollar.

TEXTILE MILL CONSTRUCTION. In the United States trade conditions were accurately reflected in the mill construction undertaken in 1920 for the textile industry. In the first half of the year there was activity, as a large number of new companies had been organized and were erecting new plants, while old-established concerns made extensive enlargements and improvements, many of which were in the nature of separate mills. In the Southern States in particular new cotton mill construction was conspicuous in the early part of the year and was the leading feature of the record. In the latter months of the year, however, there was a noticeable falling off in mill construction due to business depression which resulted in the closing down of many plants and curtailment in operation of a number of others.

According to the authoritative summary of mill construction annually compiled by the *Textile World* which the YEAR BOOK is privileged to quote, there were 264 new mills actually erected during the year 1920. This number would undoubtedly have been materially increased had a number of projects contemplated during the first six months been carried out, but which were either abandoned or postponed, in the latter case awaiting an improvement in business conditions. However 1920 measured up to the general average as is indicated by the following table:

COMPARISON OF NEW MILL CONSTRUCTION FOR TEN YEARS—1911-1920

	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911
Cotton	89	74	29	52	51	24	26	27	37	32
Wool	30	54	24	24	23	19	21	24	24	20
Knitting	59	84	120	97	113	111	110	142	122	92
Silk	71	61	49	86	60	25	51	54	46	88
Miscellaneous	15	16	27	38	33	40	37	30	36	26
	264	289	254	297	280	219	245	277	265	208

As suggested, the cotton industry made a notable showing in mill construction. In North Carolina 27 new mills were added to the industries of that State, while in South Carolina, Massachusetts, Connecticut, Rhode Island and Pennsylvania there was active mill construction as well as in New Jersey and Texas. The new Manomet Mill No. 4 of New Bedford was one of the largest projects of the year including as it did, a main mill, a large two-story weaving mill and other buildings making a complete and up-to-date plant for the manufacture of cotton yarns and tire cord fabrics. As regards large additions and extensive improvements in cotton mills as well as new construction, the Southern States again led but Massachusetts exhibited marked growth in this respect, with Rhode Island and Connecticut following in the order named.

In contrast to the cotton industry new woolen mills were practically confined to the Northern States, Massachusetts leading with eight, Pennsylvania with five and Connecticut three. The same held true as regards enlargements and improvements which were also greatest in the State of Massachusetts, though there were notable additions to woolen or worsted mills at Duluth, Minn., Philadelphia, Pa., and at Bristol, R.I.

In the knitting industry Pennsylvania added a considerable quota of new mills with New York State being a close second, but it must be remembered that many new knitting concerns either lease entire buildings or rent a considerable amount of floor space for their operations instead of constructing new mills on their own account. The range of this industry continued to increase and in addition to the manufacture of sweaters and hosiery as well as bathing suits, underwear and knitted fabrics, silk hosiery was in many cases the principal product of a number of mills.

Despite varied conditions in the silk industry (see *SILK*) there was in 1920 considerable erection of new mills and extensions to those already established. Pennsylvania ranked first, as it did in 1919, with New York and New Jersey following, the others being scattered among the New England and Southern States. In 1920 New York State erected more silk mills than New Jersey, but new companies, however, in large numbers started operations in this silk centre, especially at Paterson. In many cases these concerns did not build new plants but purchased buildings or leased space in existing mills.

Under the head of miscellaneous mills, including principally those for dyeing, finishing and mercerizing, with a few asbestos, hemp and jute mills, the increase in 1920 was in about the same proportion as in 1919. An interesting enterprise was the Milverton Flax Co., Ltd., located at Milverton, Ontario, which not only built a new mill but was raising flax and tow to be used in the manufacture of flax fibre and tow products.

The Rockbestos Products Corp., New Haven, Conn., began operations during the year in the manufacture of asbestos for brake linings and

asbestos insulating wire, while the Asbestos Textile Co., North Brookfield, Mass., erected a new plant. The Olympic Textile Corp., Seattle, Wash., a company engaged in manufacturing all kinds of ramie goods, tire fabrics, etc., had made plans for the erection of a new mill during the spring of 1921.

UNITED STATES IMPORTS AND EXPORTS. The accompanying table shows that both imports and exports were greater in 1920 than in the previous year. The exports in 1920 exceeded imports by \$70,555,550.

IMPORTS

	Twelve mos. ending Dec., 1920	Twelve mos. ending Dec., 1919
Manufactures of—		
Cotton	\$137,431,814	\$52,649,218
Total fibre, flax, hemp, etc.	153,665,719	95,032,853
Silk	75,327,914	54,700,816
Artificial silk	2,102,704	4,936,344
Wool	58,115,537	19,059,806
	\$426,643,688	\$226,379,037

EXPORTS

Manufactures of—		
Cotton	\$402,079,647	\$273,115,411
Total fibre, jute, hemp, etc.	25,818,688	31,114,389
Silk	26,820,602	23,903,087
Artificial Silk	7,909,299	9,704,248
Wool	44,571,002	47,883,061
	\$507,199,238	\$385,670,196
Excess of exports ...	\$70,555,550	\$159,291,159

BRITISH COTTON INDUSTRY. The importance of the cotton manufacturing industry of Lancashire to Great Britain may be appreciated by the fact that during 1920 out of total exports from the United Kingdom amounting to £1,557,974,984 the shipments of manufactured cotton goods amounted to £401,682,535 in value.

The shipments of piece goods for the year prior to the war and for 1919 and 1920 was as follows:

	Yards	£
1913	7,075,252,000	97,775,855
1919	3,523,660,000	179,073,466
1920	4,436,557,500 (sq. yds.)	315,733,164

During 1920 compared with the previous year British foreign trade in cotton goods showed an increase in the case of the countries named as per the following list:

	Yards
Bombay	292,772,000
Bengal	232,973,000
China	148,216,000
Egypt	110,879,000
Dutch East Indies	85,227,000
Australia	63,326,000
United States	61,345,000
Argentine Republic	54,108,000
Straits Settlements	49,806,000
Burmah	48,248,000
Canada	35,652,000
Madras	32,248,000

On the other hand shipments to the following countries have fallen off, the decreases being given:

	Yards
Denmark	74,545,000
Belgium	70,656,000
France	69,894,000
Turkey	68,916,000
Switzerland	47,979,000
Germany	38,516,000
Netherlands	24,330,000
Roumania	16,466,000
Morocco	13,200,000
Foreign West Africa	10,466,000
Persia	6,255,000
Greece	1,864,000

With regard to British cotton yarn exports the following comparative table indicates the difference between the year before the war and 1919 and 1920:

	Pounds	£
1913	210,099,000	15,006,291
1919	162,616,600	33,907,909
1920	147,542,900	47,824,983

See COTTON, SILK, WOOL.

THEOSOPHICAL SOCIETY. An organization to form a nucleus of the Universal Brotherhood of Humanity without distinction of race, creed, sex, caste, or color. To encourage a study of comparative religion, philosophy, and science. To investigate unexplained laws of nature and of powers latent in man. This society was organized in 1875 by Madam H. P. Blavatsky and Col. H. S. Olcott in New York City. Later world headquarters were established at Adyar, Madras, India. It is a world-wide organization and presents a synthesis of the underlying principles of all religions. It attempts to explain the origin, the evolution, and the destiny of the human race. Works by its authors may be found under the names of H. P. Blavatsky, Anne Besant, C. W. Leadbeater, C. Jinarajadasa, A. P. Sinnett, I. S. Cooper, and L. W. Rogers. The president of the society is now Mrs. Anne Besant. The national headquarters of the American Section of the Theosophical Society are at 645 Wrightwood Ave., Chicago, Ill.

THORNE, WILLIAM VAN SCHOONHOVEN. Financier, died February 6. He was born at Millbrook, N. Y., March 22, 1865, and graduated at the Sheffield Scientific School in 1885. He went into the railway service and became president of the Delaware Valley and Kingston Railway. He was afterward assistant to E. H. Harriman on the Southern Pacific and was director of purchases on the Union Pacific and other western lines. He became vice-president of the Union Pacific, Feb. 19, 1919, and was a director or officer in a number of other lines, and of express companies, and other commercial enterprises.

THURINGIA. A federal state created under the new German republic in 1920. It was officially recognized April 24 and included the following divisions: Saxe-Weimar-Eisenach, Saxe-Meiningen, Saxe-Altenburg, Saxe-Gotha, Reuss, Schwarzburg-Sondershausen, and Schwarzburg-Rudolstadt. Area, 4546 square miles; population, according to the census of Dec. 1, 1910, 1,510,538. Capital, Weimar, with a population in 1910 of 34,582. The constitution was in process of formation in 1920, and meanwhile the

executive authority was in the hands of the ministry, composed of representatives from each of the above states; and the legislative authority in a Volkshat, or legislature, consisting of representatives from the legislatures of the above states. President of the ministry at the beginning of 1920, Dr. A. Paulsen.

THURSBY, Sir JOHN. British sportsman prominent in the races, died in December. He was born April 27, 1861, and educated at Eton and at Trinity College, Cambridge. He was a barrister and became high sheriff of Lancashire in 1905. It was as the proprietor of a great racing stud that he was best known; many of the celebrated race horses of the time were raised in his stables.

TIBET. An extensive region forming a dependency of China, reaching from the Pamirs to the frontiers of China. The estimated area is 463,200 square miles; estimates of population vary from 1,500,000 to 6,000,000, a probable estimate being about 2,000,000. Capital, Lhasa, with a population of from 15,000 to 20,000. Agricultural methods are primitive and in many parts of the country society is in the pastoral stage. Among the minerals worked are gold, borax and salt. Trade is chiefly with India and China. In 1918-19, imports from India were £150,000; exports to India, £460,000.

TIDAL POWER. See DAMS.

TILAK, BAL GANGADHAR. Indian political leader, died in July. He was born in 1855. His name became known during the famine and plague in 1897 when he attacked the preventive measures against the plague as tyrannical, and denounced the government. These attacks were followed by the murder of a British official. Finally Tilak was prosecuted for sedition and sentenced to eighteen months imprisonment, but was released within a year. In 1908 he was arrested again on the charge of disloyalty and sentenced to six years transportation which was afterwards commuted to imprisonment. He was released in 1914, but continued to give trouble in spite of his promises of loyalty. In 1915 he sued Sir Valentine Chirol for defamation on account of the book called *Indian Unrest*, published in 1910; and he came to England in 1918 in connection with his trial which took place in February, 1919. The verdict went against him and he returned to India. Among his latest activities was an attack upon his former friend and associate, Mrs. Besant, on account of her support of the reform bill.

TIMBER. See FORESTRY.

TIN. No single commodity was affected more by world commercial conditions in 1920 than tin, as its production and marketing in the East always are responsive to speculative and other influences, artificial as well as natural. In the summer of 1919 a boom started readily as there was a small visible supply due to the governments of the Federated Malay States and the Dutch East Indies carrying for their own account some 15,000 tons. Eventually this was unloaded but the price of tin, which in September 1919 was about £270 a long ton, steadily climbed until in February a maximum of £420 per ton was reached. This, however, was the turning point and soon large quantities of tin were being put on the market everywhere and prices fell. By the middle of June in London standard tin sold for £235 and then after a reaction in August carrying the price to £284 the steady decline set in,

continuing until new low levels were reached in November—in short, back to pre-war levels. There were decreased supplies at the end of the year.

nal revenue sources in 1916 and 5.4 per cent in 1920.

There were produced and withdrawn for consumption during the year 8,966,028,002 cigars,

TIN MARKET IN 1920—CLOSING PRICE END OF MONTH

1920	Silver in London, Pence per Ounce	Demand Sterling Exchange, New York Dollars	Spot Standard Tin, London, £ per Ton	Spot Straits Tin, London, £ per Ton	Currency Equiva- lent, New York, Straits Fin, Cents per Lb.	Spot Market New York, Straits Fin, Cents per Lb.
January	83	8.5025	383. 5.0	388. 5.0	60.707	59.50
February	83.125	8.4025	400. 0.0	400. 0.0	60.759	60.25
March	72.625	3.9025	348. 0.0	348. 5.0	60.672	63.00
April	64.50	3.82625	345. 0.0	345. 0.0	58.931	60.50
May	57.025	3.875	374.10.0	275. 0.0	47.578	51.50
June	52	3.94875	246. 0.0	258.10.0	45.512	47.75
July	56.625	3.725	268. 5.0	283. 0.0	47.061	48.25
August	58.75	3.5625	272. 0.0	280. 0.0	44.531	46.75
September	59.375	3.4625	268. 0.0	270. 0.0	41.785	42.75
October	52.50	3.4425	267. 5.0	270. 5.0	41.533	40.25
November	43.875	3.48125	207.10.0	208. 0.0	32.326	33.25
December	40.875	3.53	205.10.0	210.10.0	33.172	35.00

TIN—COMPARATIVE STATISTICS (RICARD & FREIWALD)
(In Tons of 2,240 Lb.)

	Year Ended Nov. 30, 1920	Year Ended Nov. 30, 1919	Year Ended Nov. 30, 1918
Visible supply beginning of period	20,495	8,546	16,408
Supplies:			
Straits	49,826	48,693	54,752
Australian	3,200	2,300	3,345
Banca and Billiton	15,671	11,779	11,104
Standard	13,843	7,971	9,364
Total	82,540	70,743	78,565
Deliveries:			
United Kingdom	21,589	18,306	16,905
Continent	5,751	10,965	12,127
U. S. A.	57,714	29,523	57,395
Total	85,054	58,794	86,427
Visible supply end of period	17,981	20,495	8,546

See ALASKA.

TIRES, AUTOMOBILE. See RUBBER.

TIROL. An Alpine region which before the downfall of the Austro-Hungarian monarchy was a crownland of Austria, comprising the greater part of the administered district of Tirol and Vorarlberg; with Bavaria on the north and Salzburg and Carinthia on the east. Area, 10,362 square miles; population, Dec. 31, 1910, 946,613. The province of Northern Tirol was included within the new Austrian republic.

TOBACCO. The 1920 crop of tobacco in the United States considerably exceeded that of any previous year, being estimated at 1,508,064,000 lbs. in comparison with 1,463,325,000 lbs. in 1919 and the previous five-year average of 1,187,708,000 lbs. The price, however, was low compared with 1919 which gave the large crop a farm value only a little over half that of the previous year, namely, \$298,000,000.

There was vigorous protest at the reduction in price, especially in Kentucky, the largest tobacco growing State and the centre of the Burley tobacco industry, where markets remained closed for a time owing to the action of growers.

Tobacco continues to increase as a source of revenue to the United States, the receipts for the fiscal year ended June 30, 1920, amounting to \$295,809,355.44, an increase of \$89,806,263.60 or 43.6 per cent over the preceding year. The 1920 tobacco revenues were the largest ever collected and were five times those of 1910 and almost double those of 1918. Tobacco taxes comprised over 17 per cent of the total receipts from inter-

large and small, which exceeded any annual production for the past ten years except 1917. Since 1917 cigarettes have furnished the greatest revenue of any tobacco item. In 1920 50,408,827,557 small cigarettes were produced, or an increase of 32 per cent over 1919, and 39,714,132 large cigarettes, an increase of 38 per cent. Tax was paid on 414,877,746 lbs. of chewing and smoking tobacco and 38,605,173 lbs. of snuff, representing increases of 10 per cent and 11 per cent respectively. More than four-fifths of the total revenue on tobacco manufactures came from seven States—North Carolina, New York, Virginia, Pennsylvania, New Jersey, Ohio, and Missouri, in the order named.

Tobacco consumption in the United States has increased from 76,000,000 lbs. a year in the decade following the Civil War to 588,000,000 lbs. in 1905-1914, 900,000,000 in 1916, 1,000,000,000 lbs. in 1917, and 828,000,000 lbs. in 1918. The average per capita consumption of 2 lbs. following the Civil War increased to an average of 8 lbs. a year in the four years 1915-1918.

In the fiscal year 1920 unmanufactured domestic tobacco was exported from the United States to the value of \$271,940,888 and manufactured tobacco produced to the value of \$51,551,794. The imports for the year had a value of \$91,438,597, largely unmanufactured.

Hearings were begun by the U. S. Department of Agriculture in the fall of the year on tentative proposals for regulations and standards applying to tobacco, under the U. S. Warehouse Law. It is the plan under that law to license tobacco warehouses whose operators agree to adopt

the Government standards and regulations. It is expected that under such conditions warehouse receipts will serve as a means of negotiating loans in financing the tobacco crop and industry.

England has again taken up experiments in tobacco growing and the British Tobacco Growers Society has carried on field trials in many parts of that country. These have proved that the crop can be grown successfully on the poorer soils of Norfolk and can take its place as a farm crop in the ordinary rotation. Small areas are becoming well established. As late as 1910 the growing of this crop was prohibited by law.

TOBAGO. See TRINIDAD AND TOBAGO.

TOGO. Formerly a German colony in West Africa, constituting a protectorate and situated on the coast between Dahomey and the Gold Coast. It surrendered unconditionally to the Allies Aug. 14, 1914, and was divided administratively after the war between France and Great Britain. Area, 33,700 square miles; colored population (1913), 1,031,978; European population estimated in 1918 at 110. The eastern part, allotted to France, has an area of 21,893 square miles. The British part making up about a third of the territory borders the Gold Coast. The soil is fertile in the coast region and there are abundant forests. The chief commercial products are palm oil, palm kernels, cocoa, and copra. In the French portion the total volume of foreign trade in 1919 was equal in value to \$7,315,014, reckoning the franc at \$0.193, as against \$4,183,935 for 1918. The value of the imports was equal to \$3,210,172 as against \$2,000,284 in 1918. The value of the exports in 1919 was \$4,104,842 as against \$2,183,651 for 1918. The principal exports for 1919 were as follows, statistics of values not being available; Castor-oil beans, 161 metric tons; cocoa beans, 6 tons; copra, 378 tons; cotton lint, 555 tons; palm kernels, 4762 tons; and palm oil, 413 tons. Of the foreign trade in 1919 France enjoyed 21.30 per cent, England 64.70 per cent, and other countries 14 per cent. See FRANCE, *History*.

TOLEDO, OHIO. See GARBAGE.

TOLEDO, UNIVERSITY OF. An institution of the higher learning at Toledo, Ohio, founded in 1872. There were 210 students enrolled for the summer session and 1355 students for the regular fall session of 1920. The faculty numbered 31 members for full time and 23 for part time. The income of the institution amounted to \$170,440 for the year. There were about 8000 volumes in the library. President, A. M. Stowe.

TONGA, or the FRIENDLY ISLANDS. Three groups of islands in the Pacific Ocean between 16° and 23° 30' south latitude and 173° and 177° west longitude, constituting a British protectorate. Area, about 385 square miles; population estimated in 1917, at 23,766, of whom 22,590 were Tongans.

TONGKING. A territory annexed by the French in 1884, comprising the Northern main division of the colony of French Indo-China, south of the Chinese provinces of Kwansi and Yunnan. Capital, Hanoi, with a population (1915) of about 150,000. It is the capital also of French Indo-China. See FRENCH INDO-CHINA.

TONNETTI, MICHEL. See PAINTING AND SCULPTURE.

TORONTO, UNIVERSITY OF. A Canadian institution of the higher learning at Toronto,

Canada; founded in 1827. There were 4600 students enrolled in 1920. The faculty numbered 511. The endowment fund amounted to \$6,110,412 and the income for the year was \$1,055,825. The women of the college and their friends have inaugurated a plan for raising funds to help in the erection of a new Union. The governors have set aside \$125,000 for the erection of a Women's building. The Rockefeller Foundation was to have appropriated \$1,000,000 for the general endowment of the Medical Department upon condition that the University carry out a programme of development, including items to be provided from funds other than those contributed by the Rockefeller Foundation. The library contains 160,000 bound volumes and 52,000 pamphlets. President, Sir Robert Falconer, K.C.M.G.

TORPEDO BOATS. See NAVAL PROGRESS.

TOSCANINI, ARTURO. See MUSIC, *Orchestras*.

TRACK AND FIELD ATHLETICS. See ATHLETICS.

TRACTORS. See AGRICULTURE.

TRACY, S. M. See BOTANY.

TRADE UNIONS. The chief matters of interest in Trade Unions in the United States will be found in the article on the American Federation of Labor. See LABOR, AMERICAN FEDERATION OF GREAT BRITAIN. The amalgamation of various trade-unions into federations, the fusion of local interests into the larger combination of the labor party from a political standpoint, and the formation of a comprehensive trade union congress, with a membership of over 500,000 were the main features of the year 1920. The Trade Union Congress was held at Portsmouth with 955 delegates, representing 6,505,482 members. The 1921 meeting was fixed for Cardiff. See GREAT BRITAIN.

OTHER COUNTRIES. In Canada at the beginning of 1919, there were 2,274 branch unions with a total membership of 248,887; and 96 international unions having one or more branches in Canada with a membership of 201,432. In Australia in 1920 the membership of the trade unions was reported at 582,000 distributed in part as follows: Railways, 75,000; shipping, 50,000; metal-working, 47,000; agriculture, 44,000; food, tobacco, and drink manufactures, 41,000; building, 36,000; mines and quarries, 36,000; clothing, 30,000. In Germany the membership of the unions was reported in June, 1919, at 5,500,000 and at the close of 1920 at 7,500,000, the largest class being the metal-workers, placed at 1,600,000. Over 5,000,000 of the total membership belonged to industry, handicraft, and mining, and only 650,000 to agriculture and forestry. Other countries for which recent figures were available were: The Netherlands (1920), Members of Dutch Federation of Trade Unions, 247,870; Denmark (1920), 360,000; Hungary (1918), 500,000; Czecho-Slovakia (1919), 500,000; Switzerland (1919), 210,000 members of the Central Association; Austria (1919), 378,000 paying members of the Federation of Trade Unions.

TRANSCONTINENTAL MAIL. See AERONAUTICS.

TRANSVAAL. See SOUTH AFRICA, UNION OF.

TRANSYLVANIA. A part of the crownland of Hungary until the closing months of 1918, when it was annexed to Rumania; political status subject to the Treaty of Versailles. Area, 22,318 square miles; population, Dec. 31, 1910, 2,-

678,367. The inhabitants declared their independence of Hungary, Dec. 22, 1918, and on Jan. 11, 1919, Rumania by royal decree annexed the territory. In March, 1920, Transylvania had 45 senators in the Rumanian upper house and 112 Deputies in the Rumanian lower house.

TRAVEL. See LITERATURE, ENGLISH and AMERICAN.

TREUB, HECTOR. Dutch medical authority, died in April. At the time of his death he was professor in the University of Amsterdam. He was born in 1856, studied at Leyden University, where in 1886 he became a lecturer and built up a strong clinic in gynecology. He was placed among the best-known gynecologists of his time.

TREVOR, Sir ARTHUR CHARLES. British military officer, died in West Brompton, England, in October. He was born at Jellalabad, Afghanistan, April 6, 1841, the son of Capt. R. S. Trevor, who was killed by treachery in Kabul, leaving the child among the women and children, who made their escape after the garrison was captured by the Afghans. At the time of Sir Arthur Trevor's death, he was the only surviving member of the fugitives that were taken prisoner by the Afghans. He was educated at Oxford, but went to Bombay in 1861 and served in the administration. He was revenue member of the Bombay government after Nov. 18, 1892 and he was appointed Public Works Member of the Indian government in April, 1895.

TRIESTE. Before the disruption of the Austro-Hungarian empire a crownland of Austria, consisting of the Mediterranean port of Trieste with the surrounding region; occupied by Italy after the war. The population in 1919 was estimated at 190,013.

TRINIDAD AND TOBAGO. A British colony in the West Indies, comprising the islands of Trinidad (1860 square miles) and Tobago (114 square miles). Total population estimated, Jan. 31, 1919, 381,309. Capital of Trinidad, Port of Spain, with a population of 68,000. Imports and exports showed considerable increases in value during the year 1919 as compared with the previous year, this being attributable both to increased prices and to improved shipping facilities. The total import trade for 1919 was \$29,842,723, or \$5,319,715 greater than for the preceding year. The total export trade for 1919 amounted to \$34,831,651, an increase of \$7,225,084 over the year previous. The share of the United States in the foreign trade of Trinidad and Tobago now considerably exceeds that of any other country. During 1919, 39.1 per cent of imports was supplied by the United States, 20.5 per cent by Canada, 16.7 per cent by the United Kingdom, 13.3 per cent by Venezuela, and 4 per cent by France. There was increased activity in the petroleum industry of Trinidad during the year 1919, and many new companies purchased lands with a view to commencing drilling operations at an early date. Petroleum production had outstripped the asphalt industry, which was formerly the more important. In 1919, 475 persons were employed in the local asphalt industry as against 2425 employed in production of petroleum. The output of asphalt in 1919 was 93,806 tons, valued at \$272,088. There was an increase of 9775 tons in the output of asphalt in 1919 over the preceding year. The cane-farming and sugar-crop returns for the crop year 1919-20 showed 58,416 tons of

sugar, as against 47,850 tons in 1919, 45,256 tons in 1918, 70,891 tons in 1917, and 42,331 tons in the pre-war year 1913. The budget of 1918 was as follows: Revenue, £1,172,700; expenditure, £1,124,258. Governor in 1920, Sir John Robert Chancellor.

TRINITY COLLEGE. An institution for the education of men at Hartford, Conn., founded in 1845. The enrollment for the regular fall session was 214. The faculty numbered 19, including one addition. The productive funds amounted to \$1,700,000, and the income for the year was \$135,999.31. The library contained 90,000 bound volumes and 40,000 pamphlets. President, Rev. Remsen Brinckerhoff Ogilby.

TRIPOLI. See LIBYA.

TRISTAN UND ISOLDE. See MUSIC, Opera.

TROTTER, EDWARD BUSH. British prelate and church historian, died May 25. He was canon of Port of Spain, Trinidad. He was born Dec. 10, 1842, and educated at Harrow and at Kings College, London, and at Christ College, Cambridge. He officiated as rector in Trinidad from 1890 to 1901 and after 1908 was canon of the cathedral. He wrote the *Church of England; The Early History, Property, and Mission, Reformation Period; The Three Days of Grace; The Church Catechism and Bible Story* (3 vols.); *Two Historical Charts of The Church of England; Royal Progress of Our Lord*.

TROTTLING. See RACING.

TRUMBULL, FRANK. Railway president, died July 12. He was born at Arcadia, Mo., Nov. 7, 1858, and went into the service of the Missouri railways, in 1874. After engaging in the wholesale coal business in Colorado, he became the receiver and general manager of the Union Pacific, Denver and Gulf railway, 1893-9. From 1899 to 1909 he was president of the Colorado Midland Railway and after 1909 was chairman of the board of the C. & C. Railway Co. He held other important offices in the railway service.

TUBERCULOSIS. Dr. Maher, Chairman of the State Tuberculosis Commission of Connecticut publishes in the Medical Record for Dec. 11, 1920, a timely article on the failure of anti-tuberculosis crusades, or as he terms them "tuberculosis schemes." He limits these movements to those endorsed by a considerable number of the serious leaders of the warfare against the disease throughout the world. Such movements have originated only within the past forty years, and the weapons to combat the disease originally comprised out of door life, open windows, sanatoria, special dispensaries, condemnation of infected cattle, instruction of the public as to contagion, occupational treatment, farm colonies, tuberculosis surveys, enforcement of anti-spitting ordinances, etc., etc. Every one of these resources has become active and it is not denied that the mortality of the disease has been greatly reduced. Nevertheless for the following reasons these movements had only been partially successful. Every tenth or twelfth funeral was that of a victim of tuberculosis. Again the rich man with all of his material resources and the educated man still succumbed to the disease in large numbers. Still again the measures directed against tuberculosis were largely those which antagonized disease in general. Tuberculosis, in other words, had decreased because disease in general had lessened. In set-

ting out to do one thing the leaders of the movement accomplished something quite different. But while the men, medical and lay, who were crusading against tuberculosis at the beginning of the twentieth century were an enthusiastic lot with a large fund of valuable information, they had overemphasized the part played by man-to-man transmission and regarded tuberculosis as largely a contagious malady of adult life. This error they eventually corrected and according to the corrected view nearly every individual acquires the disease from whatever source in early childhood, this early infection amounting usually to a protective vaccination against the outbreak of the disease in early adult life. But the misfortune of having been on the wrong track for many years had largely neutralized the huge expenditures of effort and money used in the earlier decades of the movement. The entire propaganda of contagion had to be revised in favor of another which dealt almost wholly with the child. New strategy devoted against tuberculosis in childhood led to further reductions of general and tuberculous mortality. But despite the apparent advance in the movement, a certain amount of scepticism had come about, a lack of confidence in elaborate plans and formulæ. No comprehensive plan has been devised to succeed the one now in force. The nearest approach is based on the view that the tubercle bacillus is pathogenic only is one of the several phases of its bacterial cycle and a large number of the bacilli have not reached the pathogenic phase. This view has been maintained for many years by Ferran of Spain, one of the original contemporaries of Koch, who is in charge of the anti-tuberculous movement in his own country. Ferran showed long ago that the tubercle bacillus does not become virulent until it has developed a waxy capsule which protects it from the digestive action of the tissues. Thus isolated it is able to poison the organism with its subtle virus. But since in a given individual many of the bacilli have not reached this encapsuled and toxic stage it should be possible to make war on them before the deadly stage develops. This can be done to a certain extent and has always been done by outdoor life, etc., but Nature can be greatly aided by the use of a vaccine designed to destroy the bacillus in its harmless stage. Dr. Maher prophesies that in the near future no attempt will be made to attack the encapsuled bacillus but efforts of this nature will be concentrated on its precursor of the harmless and vulnerable phase. When a subject who harbors bacilli is in good health—and this is the rule—the presumption will be that the bacilli are in the harmless phase. Formerly we said that the germs while virulent were latent because of the good general condition and would flare up when the health depreciated. This explanation is one which does not explain. Ferran's doctrine furnishes the explanation—the man is spared because a majority of the bacilli have not developed into the virulent form. The author implies that this view will first be tested thoroughly on cattle and perhaps this has already been begun, but years may be required to ascertain whether permanent immunity has been secured.

TUBERCULOSIS, BOVINE. See VETERINARY MEDICINE.

TUFTS COLLEGE. A Universalist, co-educational institution at Tufts College, Mass., founded in 1885. The enrollment for 1920 was 2128.

There were 366 members in the faculty. The productive funds amounted to \$1,640,000, and the income for the year was \$202,000. The library contained 80,000 volumes. President, John Albert Cousens.

TULLOCH, ALEXANDER BRUCE. British soldier, died, May 25. He was born at Edinburgh, Scotland, Sept. 2, 1838; and educated at Sandhurst. He entered the military service in 1855 and had a varied career, serving in the Crimean War, India, the Indian Mutiny, the China campaign of 1859-60 and the Egyptian campaign of 1882. He was many times mentioned in despatches and was decorated and promoted for distinguished service. In 1904 he was *Times* correspondent in Manchuria. He wrote: *Recollection of Forty Years Service* (1903); *The Argentine Republic and its Neighbors* (1907); *The Highland Rising of '45* (1901); and *A Soldier's Sailing* (1912).

TULLOCH, W. W. British clergyman and author, died January, 1920. He was born at Dundee, Scotland, Sept. 25, 1846; educated at Madras college and St. Andrews university; was ordained in 1871; and was a minister in Glasgow from 1897 to 1901. He wrote the *Story of the Life of Queen Victoria*; the *Story of the Life of the Prince Consort* and other biographies.

TUNIS. A French protectorate on the Mediterranean coast, east of Algeria, known as the regency of Tunis. It is bounded on the south by the desert of Sahara. Area, estimated from 50,000 square miles to 64,600 square miles; population, estimated in 1914 at about 1,940,000 of whom the majority are Bedouins, Arabs and Kabyles (1,740,194 in 1918). The French population in 1913 was about 48,000; Italian, 112,000. The other elements in the foreign population were Anglo-Maltese, Spaniards, Greeks, Turks, and Jews, (the last-named placed at 50,583). Capital, Tunis, with a population of 161,718 of whom 67,129 were Moslems; 44,237 Italians; 26,491 Jews; and 17,875 French; but the estimates varied and some placed the total population of the city much higher. According to the latest available figures for education, there were about 301 public schools and 27 private schools with an enrollment of 40,349. The main sources of wealth are agriculture and mining, but foreign trade has become increasingly important of late years under French direction. The chief agricultural products are wheat, and other cereals; olives, grapes, dates and other fruits; wine and olive oil. Cereal crops in 1919 were given as follows: Wheat, 6,500,533 bu.; barley, 5,428,223 bu.; oats, 3,444,722 bu.; the wine yield in 1919 was 518,000 hectoliters. The estimates for 1920 for cereal crops and wine were as follows: Wheat, 110,000 metric tons; barley, 60,000; oats, 22,000; millet, 5000; wine, 418,000 hectoliters. Raising live stock is also important, including especially cattle of superior quality in the north, and sheep and goats in the southern and central parts. Wool is in much demand for the manufacture of native textiles, and in 1919 the entire clip was taken over for that purpose. (See AGRICULTURE). The minerals include phosphates, iron ore, lead, zinc, manganese, lignite, etc., and mining has lately shown a steady increase. The forest lands which are controlled by the state are found chiefly in the northern and central regions. The manufacturing industries include saddlery, shoemaking, textile weaving, dyeing, and the manufacture of per-

fumes, silk, and cotton. No later figures for commerce and finance, etc., were available than those given in the preceding YEAR BOOK. Reigning Bey, at the beginning of 1919, Sidi Mohammed; French resident general, Etienne Flandin.

TUNNELS. During the year 1920 owing to the limited available resources of American and other railways, comparatively little was done in the way of tunnel construction. For rapid transit and municipal and state highways, however, there was distinct progress, especially in and about New York and at Pittsburgh. At New York tunnel construction for the great subway systems continued and a comprehensive project for future development proposed still further work which is referred to briefly below and also under RAPID TRANSIT (q.v.). There was, however, at New York the important Hudson River vehicular tunnel, work on which was begun during the year and which presented interesting problems, not only in construction but also in ventilation, as it was necessary to deal with the exhaust gasses from the motor vehicles by which it would be used. The same problem was also present in the highway tunnel under construction at Pittsburgh, which was a needed and useful municipal development. A few other notable tunnels were under construction or proposed, to which reference is made below.

HUDSON RIVER VEHICULAR TUNNEL. The preparation of plans, specifications and contract forms for the construction of the four permanent ventilating shafts of the Hudson River vehicular tunnel was authorized May 25th by the bridge and tunnel commissions of the States of New York and New Jersey and the work proceeded so that contracts for the first shafts were awarded.

The Governor of New York on May 24 signed the bill making available another \$1,000,000 for this subaqueous interstate vehicular route. New York's first \$1,000,000, of which about \$100,000 had been spent, was appropriated in 1919. In this same year New Jersey also provided \$1,000,000 for the work and in 1920 the State legislature passed over the Governor's veto a bond-issue bill for \$28,000,000, half of which was to be applied to tunnel construction and half to the proposed Camden-Philadelphia bridge. (See BRIDGES.) This \$28,000,000 bond issue was referred for a referendum vote of the New Jersey electorates on Nov. 2, 1920, and by them was overwhelmingly approved.

The question of widths of roadway in the tunnel, about which there had been a great deal of discussion, was settled by the joint commissions adopting the 20-ft. roadways originally recommended by Clifford M. Holland the chief engineer.

After five contractors had submitted bids on September 21 for the construction of two of the ventilating shafts the lowest bid, that of Thomas B. Bryson, amounting to a total (official) of \$650,802.50 was accepted and the contract awarded. This contract actually provided for construction work by the two state commissions created to administer jointly the project. It covered the construction of two ventilating shafts at the Manhattan end of the tunnel located respectively at Canal and Spring Streets, near Washington Street. These shafts were rectangular and involved the sinking of two caissons consisting of steel walls filled with concrete. Measured to the outside of the cutting edge of

the caisson, both shafts had sections 47 ft. 1½ in. by 42 ft. 5½ in. The thickness of the concrete filling in the walls was 5 ft. 1½ in.

These two shafts were to form permanent ventilating openings connecting with the tubes. The present contract does not involve any equipment. The Spring Street shaft was designed to be about 54 ft. deep, while the Canal Street shaft was to be 60 ft. deep.

NEW YORK RAPID TRANSIT TUNNELS. In 1920 there were 34 single-track river crossings connecting Manhattan with The Bronx, Queens and Brooklyn. The proposed plan of the Chief Engineer of the Rapid Transit Commission contemplated 42 single-track additional river crossings. These crossings would be accomplished by tunnels and the project would involve 21 new two-track tunnel lines under the waters surrounding Manhattan and connecting Manhattan with The Bronx, Queens, Brooklyn and Richmond. These tunnels would present little in the way of construction in view of the great experience gained in sub-aqueous tunnelling about New York City. See RAPID TRANSIT.

PITTSBURGH TUNNEL. During the year construction was well advanced on the Liberty Tunnel through the South Hills, Pittsburgh. Notable both in its size of cross-section and in its length this tunnel was to afford the largest highway tunnel so far undertaken, providing two separate roadways, each for two lines of traffic with space for street cars. The length from portal to portal was 5715 ft. The tunnel was being excavated in good shale and the cross-section of each of the two tubes was of horse-shoe form with semi-circular roof arch 13 ft. 3¼ in. in radius and sidewalls 7 ft. 2 in. high above the crown of the roadway.

According to the original contract plans the tunnel excavation was to be timbered with arch sets of 12 x 12 timbers outside the neat line of the concrete lining, for the support of the rock. An interesting development was that it proved cheaper to use 8-in. Bethlehem steel H-beams cut to form segments as for timbering.

Unlike the Hudson River tunnel which was designed largely for commercial use, the new Liberty Tunnel will serve a district of purely residential character, embraced in the suburbs West Liberty, Beechview, Brookline, Dormont, Mt. Lebanon and adjacent territory, which lie beyond the south portal. There the problem was not of future industrial growth but of increased passenger vehicle traffic as the only freight transport through the tunnel would be that required for building materials and for the domestic services of the district. Accordingly the minimum capacity deemed necessary in the plan was one two-line roadway in each direction, but this would not be fully utilized for many years, and in the interval another tunnel might be built, reaching another part of the South Hills district.

The tunnel capacity was estimated at 1690 vehicles per hour in each direction, at the maximum or two lines of vehicles, both traveling at 15 miles per hour, vehicles 100 ft. apart in each line. The ventilation calculations were based on this estimate of capacity.

The Pittsburgh tunnel was the first large highway tunnel in which the problem of dealing with automobile exhaust had to be solved, and there was no precedent to guide the engineers in providing adequate and essential ventilation, though as already suggested this was also a vital ques-

tion for the Hudson River vehicular tunnel. With 114 automobiles in either tube of the tunnel at any one time (in maximum traffic), the heaviest load would be fairly represented by assuming a gross weight of two tons per vehicle. Since a vehicle of two tons traveling at 15 miles per hour represents a transportation unit of $\frac{1}{2}$ ton-mile per minute, the carbon monoxide emission, taken at 3.0 cu. ft. per ton-mile, would be 1.5 cu. ft. per vehicle per minute, or 170 cu. ft. per minute for each tube of the tunnel. Assuming from experimental data that a carbon-monoxide content of six parts per 10,000 at the exit (or half that quantity average) would be allowable, it was considered to be necessary to supply 280,000 cu. ft. of fresh air per minute to each tube. Accordingly the system designed by Saccardo for ventilating tunnels in Italy was adopted, with some modifications, such as had been practised successfully in ventilating a large number of American railroad tunnels. Here air was forced in at one end of the tunnel through suitable lateral nozzles in the side walls located near the entrance end and facing toward the other end of the tunnel, which itself forms a ventilation duct. The ventilating currents move with the traffic. An emergency maximum pumpage of 280,000 cu. ft. of air per minute per tube, or a normal maximum of 200,000 was provided in the design of two air-pumping plants to be located one at the entrance of each tunnel. With the normal pumpage the discharge velocity at each nozzle would be 2940 cu. ft. per min., or about 33 miles per hour and with the maximum pumpage the discharge velocity would be 4210 ft. per min., or about 47 miles per hour; this maximum would be needed only in cases of emergency.

PROPOSED COLORADO STATE TUNNEL. A constitutional amendment authorizing Colorado to construct the three tunnels through the mountains, as proposed by the State Railroad Commission (see 1919 YEAR BOOK, article "Tunnels") and also authorizing the issuance of bonds for the work, was defeated at the general election of November 2. This did not lead to the abandonment of the plan by its advocates who straightway put under way a movement to bring before the legislature another proposal to construct the tunnels. One plan proposed was to authorize by act of the legislature the formation of tunnel districts similar to irrigation districts, and to then permit any district to vote on the question of bonding itself for the tunnel construction. This plan aimed to make it possible to finance a tunnel on the credit of those sections of the State that would be most directly benefited, without reference to other parts of the State.

SHIMONOSEKI STRAIT TUNNEL. It was announced during the year 1920 in connection with the proposed Shimonoseki Strait Tunnel discussed in the 1919 YEAR BOOK, that a Japanese commission, was being formed to make a study of American and European tunnel-construction practice with a view to securing the fullest information on the cost and main construction problems in the proposed 10-mile tunnel under Shimonoseki Strait. This tunnel would be an important commercial link connecting as it would the main island of the Japanese group with the island to the south on which the city of Nagasaki is located and where there had been large industrial development.

HETCH HETCHY AQUEDUCT. One of the elements of the new project to increase the water supply of San Francisco under construction in 1920, was an 18-mile tunnel. At the end of the year about four miles had been excavated and the six headings were being advanced daily at the following rates: Priest, 14 ft.; Big Creek east, 7 ft.; Big Creek west, 7 ft.; South Fork east, 9 ft.; South Fork west, 12 ft.; Early Intake, 10 ft. It was planned within two months to open four new headings and the work then was expected to progress at the rate of 3000 ft. per month. See **AQUEDUCTS**.

KERCKHOFF TUNNEL. During the year rapid progress was made on the Kerckhoff tunnel, under construction to supply the new Auberry (Cal.) plant of the San Joaquin Light & Power Corp. Work on this tunnel, which is 18,000 ft. long and 17 x 17 ft. in section was begun in June, 1919, and so rapidly was it pushed that the plant was put in service on August 15, 60 days ahead of schedule, and being it was claimed the first hydro-electric project to be started and completed since the end of the war. The tunnel construction was attacked from a number of headings reached from the portals and two adits. Considerable speed was secured in the execution of the work as the contractors and the crews on different headings were encouraged to compete with one another. Prizes or bonuses were awarded for the longest round pulled, the greatest progress on a weekly basis, and the first hole through to the opposing side. The various progress measurements were checked by an engineer not particularly connected with the tunnel work, so that no partiality could be claimed by any one crew and the records for long breaks in a 17-ft. x 17-ft. tunnel and for driving 1343 ft. in three months were claimed as unique in American tunnel excavation.

Another interesting record of tunnelling progress mentioned in the technical press of the year was an advance of 484 ft. in 432 hours working time made in October, 1919, in the 8 x 8 ft. drift of the Holmes mine, one of the Cleveland-Cliffs Iron Co.'s properties situated at Ishpeming, Mich. The rock pierced was diorite, hard and dense. Drilling per round required from 17 to 19 holes aggregating more than 100 ft.

During 1920 there was published or at least made available outside of Germany the fourth edition of Brandau's *Vorarbeiten, Erd-, Grund-, Strassen- und Tunnelbau*.

TURBINE, STEAM. See **STEAM TURBINE**.

TURKESTAN. A division of Russia in Central Asia, comprising the provinces of Samarkand, Fergana, Syr-Darya and Semirychensk, with a total area of 420,807 square miles; population, Jan. 1, 1915, estimated at 6,684,400. Chief towns: Tashkent, 271,650; Kokand, 113,700; and Omsk, 129,422. Also a dependency of China, lying to the north of Tibet with an area of about 550,340 square miles and a population of about 1,200,000. Chief towns, Khotan, Kashgar and Yarkand.

TURKEY, formerly the **OTTOMAN EMPIRE.** A country of Asia Minor, bordering the eastern shore of the Mediterranean; its limits and political status, which were subject to adjustment by the Peace Conference were still indeterminate at the close of 1920.

AREA AND POPULATION, etc. Turkey in Europe after the Balkan wars was reduced from an area of 65,350 square miles to 10,882 square miles and

from a population of 6,130,200 to 1,891,000. Turkey in Asia comprised Anatolia, Arabia, Kurdistan, Mesopotamia, Palestine, Syria and certain islands of the Mediterranean. The Asiatic dominion before the late war had an area of 602,842 square miles and a population of 18,992,900. Under the Treaty of Sevres, May 11, 1920, the modification of which was under discussion at the close of the year, there was a still further reduction of the Turkish territory. Under this Turkey was required to cede Thrace and Smyrna to Greece; Mesopotamia, Palestine, Syria, Armenia and the Hedjaz were to be independent; Kurdistan was to be self-governing; and the Dodecanese, Castellorizo were to be ceded to Italy. (See below under HISTORY and WAR OF THE NATIONS.) The estimated loss in square miles was about 438,750, and in population about 12,000,000. The population of the chief towns in the former Ottoman empire was estimated as follows: Constantinople, 1,000,000; Smyrna, 375,000; Damascus, 250,000; Aleppo, 250,000; and Bagdad, 225,000. No later figures for production, etc., were available than those given in preceding YEAR BOOKS.

COMMERCE. No recent figures for the foreign trade were available but from a British source the following items pertaining to 1918-19 were supplied: In 1918 the imports into the United Kingdom were £694,715; exports from the United Kingdom into Turkey, £1,811,784; imports into the United Kingdom in 1919, £9,458,103; exports from the United Kingdom into Turkey, £22,124,946. In 1913-14, the total Turkish imports from all countries were £40,809,680, and the exports £21,436,120.

SHIPPING. The following information was supplied by the United States Bureau of Foreign and Domestic Commerce: Prior to 1914 efforts were made in Turkey to nationalize the merchant marine. Various companies were formed for that purpose, but these could not obtain the necessary capital and ceased to exist. Indeed, companies which had already been established suffered considerable losses. The special efforts made directly by the Turkish government to enlarge its merchant marine came to an end with the outbreak of the war. Owing to the damages sustained by the war, the Turkish merchant marine practically ceased to exist. The losses incident to the war (mainly by sinking) were estimated at almost 70,000 tons, including steamships and sailing vessels. The tonnage still remaining was

The first regular budget for Turkey was established by Djavid Bey, Minister of Finance, after the success of the Young Turk Party in 1908. The expenditures amounted to 30,000,000 Turkish pounds, against 25,000,000 revenue. In the case of this and all other Turkish budgets the actual performances did not correspond satisfactorily to the budget estimates. The government tried to put its finances in order. It placed Sir Richard Crawford in charge of customs and Mr. Laurent in charge of finances. Three financial inspectors who had served on the Reform Commission in Macedonia were engaged in the fiscal service. These measures, however, did not prevent the budget deficit from increasing each year during the period 1912-1918. In the face of these and previous deficits Turkey had recourse to foreign loans. After the conclusion of the Berlin treaty it was planned to establish a serious control over the finances, but Turkey objected and this project was abandoned. According to the ninth article of the Berlin treaty Serbia, Bulgaria, Montenegro, and Greece were to be charged with part of the Turkish debt, but this was not applied and these countries paid nothing. Later negotiations begun in Constantinople resulted in creating the Dette Publique Ottomane by virtue of an imperial decree of December 20, 1881, called the Decree of Mouharem. After that the management of the financial affairs was on a more satisfactory basis and the Turkish debt was progressively moderated. Various revenues were granted to the Dette Publique Ottomane, whose council was represented by British, French, Dutch, German, Austro-Hungarian, Italian, and Ottoman delegates. The Dette Publique Ottomane did not limit itself to simply collecting and then applying the revenues. It initiated effective measures to develop silk growing and vine culture, whose revenues greatly increased. Important betterments were also introduced in the fishing industry.

All the revenues managed by the Dette Publique Ottomane increased in value, and its administration gained public confidence. In fact, the Young Turk Government was so interested that it proposed to intrust the Dette Publique with the entire collection of Turkish tithes, but the outbreak of the war prevented this. In the table below are given statistics from recent budgets. The normal value of the Turkish pound is \$4.40, but in 1919-20 it was much depreciated.

Years ending Mar. 13—	Actual receipts	Actual expenditures	Actual deficits	Financial operations of the government for meeting the deficit
	Turkish pounds	Turkish pounds	Turkish pounds	
1912.....	27,269,751	29,908,282	2,638,531	4 per cent. loan of 7,040,000 pounds.
1913.....	27,544,759	38,919,877	10,475,118	Advances and treasury bonds for 11,000,000 pounds.
1914.....	29,201,865	35,329,950	6,128,085	1914 loan of 17,600,000 pounds.
1915.....	24,739,164	57,841,339	33,102,175	Paper money issues, 26,369,189 pounds.
1916.....	27,826,793	65,546,105	43,219,312	Paper money issues, 106,879,927 pounds.
1917.....	25,199,526	82,980,780	57,781,254	Paper money issues, 32,006,455 pounds.
1918.....	.....	.....	*85,226,362	Paper money issues, 2,499,925 pounds; Ottoman interior loan, 18,000,000 pounds.
1919.....	.....	.....	*94,509,235	

* Estimated.

estimated at about 50,000 tons, all of which was employed in the coastwise trade. The Turkish government was believed to have reimbursed the owners for the greater part of the vessels lost during the war.

FINANCE. The following information was published in American Commerce Reports in 1920.

GOVERNMENT. The Sultan in 1920 was Mohammed VI, succeeding to the throne July 3, 1913. The ministry in 1920 (April-October) was constituted as follows: Grand Vizier and Minister for Foreign Affairs and War, Damad Ferid Pasha; Sheikh-ul-Islam, Mustapha Sabri; Home Affairs, Reshid Moukhtar Pasha; President of

the Council of State, Riza Tewfik Bey; Navy, General Hamdi Pasha; Justice, Rushdi Effendi; Public Works, General Zeki Pasha; Public Instruction, General Hadi Pasha; Pious Foundations, General Hilmi Pasha; and Commerce and Agriculture, Jemal Bey. For ministerial crises see below.

HISTORY. The Nationalists under Kemal had set up a government at Angora which deprived the Sultan of any real authority over the whole of Anatolia. The Constantinople parliament in January was believed to represent only about 15 per cent of the population and it not only had the Nationalist difficulty to contend with but there was a constant agitation under the Committee of Union and Progress for the union of all Mohammedan powers on the one hand and for an alliance with Bolshevik Russia on the other. By January 1 the army of the Nationalists in Anatolia was reported to have increased to 300,000 men. The central government found itself in an embarrassing position, being threatened by the Allies on the one side and by the Nationalists on the other. Moreover, it appeared in the winter that there was disloyalty in the cabinet itself, where it was said that the minister of war, Djemal Pasha was secretly aiding the rebels. The Allies demanded his resignation. In the Chamber opinion was divided among the supporters of the nationalist movement in Anatolia, the old unionists and the independents, and none of these groups had a majority. The ministry resigned March 2 and a new cabinet was formed under Saleh Pasha as Grand Vizier, but though it was reputed to be more friendly to the Allies it did not solve the difficulty. During the winter the Nationalists were reported to have massacred the Armenians and made attacks on foreign troops. A French-Italian army occupied Constantinople March 16, and the Turks were informed that this occupation would last until the terms of the treaty had been accepted and carried out. Many Nationalist leaders were placed under arrest at this time. The Saleh cabinet resigned and was succeeded April 6 by a cabinet under the prime ministry of Damad Pasha.

By the terms of the treaty of Sèvres, which was handed to the Turkish delegates May 1, the Turkish power in Europe was limited to Constantinople; to Greece was assigned Thrace as far as the Tehatalja lines; and to an International Commission was assigned the territory adjoining this line, while the Straits were made neutral. Thus Turkish sovereignty was limited to Asia Minor, but even here there were the following exceptions: The port of Smyrna was placed under international control while the city and surrounding district passed under a Greek administration subject to Turkish sovereignty, but a plebiscite to be held after five years was to determine the permanent status; Kurdistan was to be self-governing under Turkish sovereignty for two years; Armenia was recognized as an independent state, whose boundaries, as subsequently decided at the close of the year, were to be determined by President Wilson; Arab and Syrian territories in the south were to be free from Turkish sovereignty. For details see WAR OF THE NATIONS.

After the treaty of Sèvres the Turkish Nationalist troops began a campaign for the purpose of effecting a revision of it. They gained some successes at the expense of the French forces in

Cilicia, forcing them to retire to the coast. The time for signing the treaty was extended for two weeks in June and then owing to difficulties between Italy and Greece over the Dodecanese there was some further delay. The Turkish delegates arriving in Paris at the end of June asked for various modifications, some of which were extreme. Certain changes were made, however, and the treaty was returned with the warning that if it were not accepted and executed, the Turks would finally be driven from Europe. After this the Greeks to whom had been assigned the task of expelling the Turks from Thrace and Smyrna, carried out their campaign successfully. This brought the Turks to terms and they signed the treaty of Sèvres on August 10.

A difficulty arose in the cabinet in September, resulting in the change of the office of the Sheikh-ul-Islam (September). On October 18 the Damad cabinet, unable to meet the necessity of an immediate ratification of the treaty, retired and a provisional cabinet was formed October 22 under Tewfik Pasha, as Grand Vizier, as follows: Minister of War, General Zia; Interior, Marshal Izzet; Navy, Marshal Saleh; Foreign Affairs, Sefa Bey; Agriculture, Kiazim Bey; Sheikh-ul-Islam, Nury Effendi. The new government appeared to have little authority and there were continued reports of the increasing strength of the Nationalists under Kemal who, it was said, would fight on until the Sultan became a free agent and Turkish territories were restored. At the beginning of December the Tewfik government was negotiating with the Allies for a modification of the treaty. Meanwhile the terms of the secret agreement among the Allies formed at the time when the treaty was drafted were made public. (See WAR OF THE NATIONS.) The return of ex-King Constantine to Greece was believed to make the modification of the treaty inevitable. The Turks also believed that France would come to terms with the Nationalists.

The following report of the agreement between Kemal and the Bolsheviks was published by the British and French governments, November 23:

- "1. To insure the territorial integrity of Turkey and restore Turkish administration in the regions inhabited by Turks.
2. Turkish control is to be established in the new States of Arabia and Syria.
3. Facilities are to be accorded Russian delegates with a view to the development of communism in Turkey.
4. Russia and Turkey agree to "liberate Moslem countries, such as India, Algeria, Egypt, Morocco and Tunisia, from the foreign yoke" and grant them independence.
5. Russia recognizes the independence of Moslem States in her territory, and guarantees their integrity.
6. Russia agrees to grant financial and material aid to Turkey.
7. Russia agrees to dispatch two army corps, followed by more if necessary.
8. Hostilities may be continued against the Entente without previous reference to the National Councils of both countries."

At the end of November Kemal offered terms to the Armenian government at Erivan and on December 2-3 an armistice was formed containing according to Near East Relief headquarters in New York the following provisions:

"Under the armistice terms, all troops except officers and six soldiers in Karakliss were to withdraw eleven miles from the zone. Refugees are permitted to return into the area, but it was not known whether any guarantee of their safety had been provided. The Armenians were to deliver to the Turks 2,000 rifles, sixty machine guns, two locomotives and 560 cars." See

ARMENIA; WAR OF THE NATIONS; NAVAL PROGRESS; AGRICULTURE.

"A neutral zone, about sixty-eight miles long, had been provided for between Sanain and Alaguez, the second highest mountain in Armenia, and thirty-four miles northwest of Erivan, the Armenian capital. Other boundaries were unknown in Sanain. A commission of three Turks and three Armenians, to control the neutral area, was to arrive Dec. 6.

The territory in the neutral zone includes the important Armenian city of Alexandropol, and Karakiss, Delijan, Habamloo, Bash-Abaran, Akhta, Khouroum, Bandamal and a score of other towns.

MEDIATION IN AMERICA. On December 16, President Wilson announced that he had appointed Mr. Henry Morgenthau as mediator. On December 26, Lloyd George called attention to the report that Armenia was under Soviet control. In the circumstances it did not seem practicable that the President should address himself first to the Armenians and the Turks. The immediate cause of the difficulty between the two parties was the treaty of Sèvres, certain factions having failed to accept it on the one hand, and the Allied Powers having failed to enforce it on the other.

TUSKEGEE INSTITUTE. A non-sectarian co-educational normal and industrial institution for the higher education of negroes, at Tuskegee Institute, Ala. It was founded in 1881 by Booker T. Washington. There were 622 students enrolled for the summer session and 1854 for the regular fall session. The faculty had 230 members. The library contained 24,000 volumes. A new building, The Ellen James Hall for girls was completed. Principal, Robert Russa Moton, LL.D.

TUTHILL, RICHARD STANLEY. Judge, died, November 30. He was born at Vergennes, Ill., Nov. 10, 1841, and graduated at Middlebury College, Vt., in 1863. During the Civil War he served as a scout under General John Logan and was afterward in the artillery in the Army of Tennessee. After the war he was admitted to the bar and practiced for several years in Kentucky and then settled at Chicago, where he was City Attorney, 1875-9, and United States District Attorney from 1884-6. After 1887, he was Judge of the Circuit Court of Cook County, Ill. After the Juvenile Court Law was passed, 1889, he was chosen to organize the court and hold its sessions. He did so for the next six years, the court serving as a model for similar institutions throughout the country.

TWINING, PHILIP GEOFFREY. British general and engineer, died April 15. He was born at Halifax, Nova Scotia, Sept. 7, 1862, and educated at Kingston, Canada. He entered the Royal Engineers in 1886 and served in Canada, Africa and the Far East. During the European war he was several times mentioned in despatches and was raised to the rank of major-general, Jan. 1, 1917. He contributed extensively to the periodicals.

TYPHOID FEVER. For the past eight years the *Journal of the American Medical Association* has published an annual report of the status of typhoid fever in the United States. The last report, covering the year 1919, appears in the issue of March 6, 1920. The statistics cover all cities of more than 100,000 inhabitants. The death rate from typhoid is steadily diminishing in these cities and if the present rate of decrease is maintained the disease will eventually become extinct. Fifteen years ago the average rate was about 20 per 100,000 inhabitants and at present it is well below 10. The deaths of 1919 may be profitably contrasted with those

of 1918. The nine largest cities with the sole exception of Philadelphia show a decrease over the the previous year, and in all of these the death was under 10 per 100,000. The mortality at Baltimore and Detroit was the lowest in the history of these cities, while in Chicago, Boston, New York and Cleveland the rate was phenomenally low. Thus in Chicago, for example, with a population of 2,500,000 there were but 31 deaths from typhoid during the whole of 1919. In the smaller cities there was a decline in all but two. Kansas City remained stationary while in Memphis as the result of an extensive epidemic, the rate reached 58. Birmingham showed a rate of 15. Aside from these exceptions the figures varied from 0 in Spokane up to 10. In Scranton, Worcester, Fall River, Oakland, Toledo and Richmond it was below four per 100,000. The improvement in some of the cities followed improvement in the purity of the drinking water, while the higher figures in other cities could be attributed to water and milk contamination. Thus in Memphis the high rate was attributable wholly to impure water. A very large number of city dwellers contracted the disease while in the country. Much of the improvement in the death rate of the past few years is attributable to anti-typhoid immunization as practiced on the troops during the war.

In an editorial article in the *Medical Record* for Nov. 27, 1920, attention is called to the severe epidemic now raging in Poland and Galicia, which must be regarded as an international danger. During the war and thus far after it, western Europe has been protected from the scourge, although until comparatively recent times there were endemic foci in Ireland. Russia, including the western portion, is swarming with typhus victims and the movement now under way to repatriate 300,000 Letts from Russia to Lithuania is expected to extend the disease. These are mostly infested with vermin and are quarantined and disinfected in buildings close to the railway stations at which the repatriates disembark. Upon the thoroughness of this work depends the safety of Western Europe during the coming winter, for typhus is a winter disease. All crossing places between Western Russia and Central Europe must be guarded in similar fashion in the interest of prevention and the frontier between Poland and Galicia and the countries west of them is of course being vigorously quarantined. Despite the efforts of Germany and Czecho-Slovakia in this direction infection will doubtless be borne to the latter countries. The presence of a few cases need cause no alarm for during the war the Central Empires successfully combated the spread of disease, despite the presence of a few score or few hundred cases. Typhus has throughout been kept out of Switzerland by combating lousiness among the native population. This was done by inspection of lodging houses which shelter the floating population. The inspection is carried out periodically and both lice and bedbugs are exterminated on each visit. It is a moot question whether the head louse as well as the clothes louse can disseminate the disease. The former is said to be especially abundant at present, at least in England, and no pains will be spared in ridding children from it.

According to the daily press of December 8, the Commission on Economics of the Assembly of the League of Nations in session at Geneva made typhus fever the subject of a special dis-

cussion. The passage through Poland since 1914 of more than 200,000 prisoners of war and refugees was said to have been primarily responsible for the diffusion of typhus westward. War against typhus in the Near East occupied almost the sole attention of the Assembly during the forenoon session of Dec. 7. The debate was widespread in scope and representatives of all climes and races took part. Sir G. E. Foster of Canada made a ringing appeal to the world to stamp out the disease which, he stated, was gradually spreading over Europe. About one and a quarter million dollars were subscribed to finance the campaign. The Persian delegate made the announcement that the law of epidemic movement from East to West had been reversed and that Russian typhus was now a menace to Persia and other Asiatic states, with the likelihood of reaching China and India in force.

UGANDA PROTECTORATE. A British protectorate in East Africa to the north of the former German colony of German East Africa. Total area, 110,300 square miles, including 16,377 square miles of water; population March 31, 1919, 3,318,217, which was composed chiefly of natives who numbered 3,313,908. It is divided into five provinces, namely: The Eastern; Rudolf; the Northern; the Western; and the province of Buganda. Total imports (1917-18) £1,296,100; exports £1,076,904; revenue (1919-20) £495,548; expenditure, £465,117. Governor and commander-in-chief, Sir R. T. Coryndon.

UKRAINE. A portion of Russia known also as Little Russia, comprising for the most part the Russian provinces of Podolia, Volhynia, Kiev, Poltava, Chernygov, Ekaterinoslav and Kharkov, together with parts of adjoining provinces. The territory claimed by the Ukrainians, however, covered a wider extent, reaching from the Caspian Sea on the east to the Black Sea, embracing a large part of Southern Russia. The area, including the regions claimed was placed at 498,100 square miles with a population of 46,000,000, of whom 32,662,000 were classed as Ukrainians; 5,376,800 Russians; 3,795,760 Jews and 2,079,500 Poles. Other estimates placed the Ukrainians at a much lower figure. By far the great majority of the people belong to the Ukrainian Orthodox church, but there were besides 6,847,140 Greek Catholics; 4,500,000 Russian Orthodox; 3,800,000 Jews; and 2,000,000 Roman Catholics. In 1918 the elementary higher schools were placed at 1162. It was estimated that about 60 per cent of the children of school age were in attendance. In 1918 the budget was as follows: Revenue, £80,644,000; expenditure, £115,000,000. The chief industry has been the manufacture of sugar. The independence of Russian Ukraine was proclaimed soon after the outbreak of the Russian revolution (Nov. 21, 1917); and of Austrian Ukraine (Nov. 19, 1918). A provisional government was established Dec. 14, 1918, and consisted of a directory of five members, acting through a responsible ministry, which was to hold office until a parliament had been constituted. Eastern and Western Ukraine were united Jan. 3, 1919. The allied Powers recognized Ukraine's independence in 1919. For further details in regard to the movement of the Ukraine, for independence, see preceding YEAR BOOK. President of the directory, at the beginning of 1920, Simon Petlura. See WAR OF THE NATIONS.

UNAFLOW ENGINE. See STEAM ENGINE; STEAM TURBINE.

UNEMPLOYMENT. In the United States complete figures for the year were not available. In the first part of the year conditions were better than at the same period of the year before. From reports of the Bureau of Labor Statistics based on returns from representative establishments in 13 manufacturing industries it appeared that in 11 industries there was an increase in the number of persons employed, while in 2 there was a decrease. The largest increase, 58.7 per cent, was shown in men's ready-made clothing, and the decreases, 5.8 and 4.6 per cent, appeared in car building and repairing and in cigar manufacturing, respectively. All of the 13 industries showed an increase in the total amount of the pay roll for April, 1920, as compared with April, 1919. The most important percentage increases, 151.2, 90.7, and 81.1, appeared in men's ready-made clothing, woolen, and hosiery and underwear, respectively. The large increases over the preceding year were due in part to a rise in volume of employment and in part to a recovery from decline.

After the marked curtailment of production in the early autumn, large bodies of workmen were thrown out of work in many cities. Estimates appeared in the press of the number at specific points but comprehensive and exact figures were not available. In Detroit in December 75,000 men were reported out of work, in Bridgeport, Conn., 15,000. In the New England Textile industries the majority of the mills adopted a working schedule of three or four days a week. In September statistics on a number of important industries showed decreases in the employment ranging from 4 to over 14 per cent, and there were indications of rapid acceleration in the rate from that time on.

GREAT BRITAIN. The Ministry of Labor figures showed that the unemployed on the registers of the employment exchanges on December 31, 1920, numbered 499,567 men, 188,104 women, 28,702 boys, and 31,653 girls, a total of 748,026, an increase in three months of about 400,000. The distribution by Trades according to the registrations at the labor exchanges, December 10, was given as follows: Engineering and iron founding, 88,000 (of these 21,000 are laborers); general laborers, 81,000; transport trades, 52,000; building trades, 42,000 (of these 16,000 are painters and laborers); textile trades, 24,000; clothing trade, 22,000; domestic servants (women), 26,000. In addition there were 88,042 persons on short time drawing out-of-work donation or unemployment insurance benefit. Of these, 50,474 were in the cotton trade, 15,325 in other textile trades, 8,555 in clothing and boot and shoe trades, and 4,510 in engineering and iron founding. The total number of unemployed greatly exceeded the figures given above, which represent only those who applied to the employment exchanges for work. During the year 8,000,000 workers came under the unemployment-insurance plan, and from the time of the armistice £35,000,000 had been dispensed by the government in out-of-work donations. See GREAT BRITAIN.

UNION COLLEGE. A non-sectarian institution for the education of men at Schenectady, N. Y. founded in 1795. The enrolment for the fall of 1920 was 612 students enrolled and 325 in the extension courses. The faculty numbered 51, including one new member. The productive funds amounted to \$1,695,921 and the income

for the year was \$231,855. There were 50,000 volumes in the library. President, Charles Alexander Richmond, LL.D.

UNITARIAN CHURCH. Statistics for 1920 showed that this denomination had 456 churches in the United States and Canada, 83 parish houses, 85 parsonages, 497 ministers, and 43,242 members. As only a little over half the churches reported figures for the number of members, the latter figure is not correct for the entire church. It is estimated that there are 75,000 communicants. *The Christian Register* is the chief Unitarian periodical, and besides the denomination publishes *The Beacon*, *The Pacific Unitarian*, and *Unitarian Word and Work*. Three academies are maintained and three divinity schools, one being the Divinity School of Harvard University, Cambridge, Mass. The government of the denomination is under the American Unitarian Association, whose president is Dr. Samuel A. Eliot, and secretary, Rev. Louis C. Cornish. Headquarters are maintained at 25 Beacon Street, Boston, Mass. Churches as well as missionaries are maintained in Africa, Australia, Great Britain, New Zealand, Tasmania, Denmark, Norway, Sweden, Iceland, Japan, Palestine, India, Holland, Switzerland, Belgium, France, Bulgaria, Egypt, Germany, Italy, Jamaica, Russia, China, and Brazil. Home missionary work is carried on among the American Indians in the United States.

UNITED BRETHREN IN CHRIST. This denomination consists of two branches, the Church of the United Brethren in Christ, and the Church of the United Brethren in Christ (Old Constitution). It was founded in 1768 by Phillip W. Otterbein, a missionary of the German Reformed Church. Later, in 1800, the denomination was reorganized on a permanent basis. The latest available statistics for the Church of the United Brethren in Christ were those of 1919: 347,981 church members, 2403 ministers, 3498 churches, 3223 Sunday Schools with 410,149 Sunday School pupils, 1219 parsonages, 2367 Young People's Societies, with a membership of 89,562. The estimated value of churches was \$15,433,558.23, while parsonages were valued at \$2,756,396.27. Contributions for all purposes during the year amounted to \$4,530,352.12. The United Enlistment Movement, conducted during 1920 to strengthen the church, proved very successful and aroused much enthusiasm for the continuance of the church work. A publishing house is maintained in Dayton, Ohio, where *The Religious Telescope*, and *The Watchword* are published. Seven colleges and theological seminaries are maintained, including Otterbein University at Westerville, Ohio.

The Old Constitution Church had in 1919 about 20,000 communicants. Three colleges are maintained, and the principle periodical is *The Christian Conservator*, published in Ubee, Ind.

Figures for 1920 for both branches of the denomination showed 3977 churches, 2293 ministers, and 367,945 communicants.

UNITED KINGDOM. See GREAT BRITAIN.
UNITED METHODIST CHURCH. See METHODISTS, WESLEYAN.

UNITED PRESBYTERIAN CHURCH OF NORTH AMERICA. The sixty-second general assembly of this denomination was held in Pittsburgh, Pa., in May, 1920. The "New World Movement," which was inaugurated the year before to secure "the dedication of life, the enlistment

of prayer, and the necessary funds to occupy and evangelize the fields, and equip and endow the educational and missionary work under the control of the denomination at home and abroad, according to the necessities of the present and immediate future," was carried on. Total contributions to October 21, 1920, were \$11,000,000, while the original was but \$10,000,000. Reports to May, 1920, show for the denomination, 979 ministers, 4679 ruling elders, 937 congregations, and 157,135 members in America; while reports in May, 1919, showed 840 Young People's Societies, and 962 Sunday Schools. The figures for 1920 show increase over those of 1919. Contributions for 1920 were as follows: salaries of ministers, \$1,075,002; congregational purposes, \$1,568,022; boards and missions of the church, \$1,006,541; benevolences to work outside the denomination, \$203,977; contributions to women's work, \$271,110; making total contributions of \$4,124,652, and average per member of \$26.24. The average salary of pastor was \$1772. For purposes of administration the presbyteries are divided into eleven synods. The church is the strongest in the Middle West. Dr. W. M. Anderson is moderator of the church, and D. F. McGill is the stated clerk, with headquarters at the Pittsburgh Theological Seminary.

UNITED STATES. AREA. Data compiled by the United States Geological Survey and made available in 1920 afford the most recent information in respect to area of continental United States. The gross area of the United States is 3,026,789 square miles. The land area amounts to 2,973,774 square miles, and the water area—exclusive of the area of the Great Lakes, the Atlantic, the Pacific, and the Gulf of Mexico within the three-mile limit—amounts to 53,015 square miles. The southernmost point of the mainland is Cape Sable, Fla., which is in latitude 25° 07' and longitude 81° 05'. The extreme southern point of Texas is in latitude 25° 50', and longitude 97° 24'. Cape Sable is therefore 49 miles farther south than the most southern point in Texas. A small detached land area of Northern Minnesota at longitude 95° 09' extends northward to latitude 49° 23'.

The easternmost point of the United States is West Quoddy Head, near Eastport, Maine, in longitude 66° 57' and latitude 44° 49'; the westernmost point is Cape Alva, Wash., in latitude 48° 10', which extends into the Pacific Ocean to longitude 124° 45'.

From the southernmost point in Texas due north to the forty-ninth parallel, the boundary between the United States and Canada, the distance is 1598 miles. From West Quoddy Head due west to the Pacific Ocean the distance is 2807 miles. The shortest distance from the Atlantic to the Pacific across the United States is between points near Charleston, S. C., and San Diego, Calif., and is 2152 miles.

The length of the Canadian boundary line from the Atlantic to the Pacific is 3898 miles. The length of the Mexican boundary from the Gulf to the Pacific is 1744 miles. The length of the Atlantic coast line is 5560 miles and that of the Pacific coast line is 2730 miles. The Gulf of Mexico borders the United States for 3640 miles.

Nearly all maps of the United States show the parallels of latitude as curved lines and are likely to lead the ordinary observer to believe that certain eastern or western States are farther north than some of the central States that are

actually in the same latitude. For this reason, one who is asked which extends farther south, Florida or Texas, is very likely to say "Texas," but, as stated, the mainland of Florida is nearly 50 miles farther south than the southernmost point in Texas. For the same reason, when we consider the geographic positions of countries south of the United States we find that errors are likely to be made in estimating position or extent in longitude. Few realize that the island of Cuba, for example, if transposed directly north would extend from New York City to Indiana, or that Habana is farther west than Cleveland, Ohio, or that the Panama Canal is due south of Pittsburgh, Pa., or that Nome, Alaska, is farther west than Hawaii.

POPULATION. The population of the United States according to the preliminary estimate of the Fourteenth Census was 105,683,108 on January 1, 1920, as compared with 91,972,266 in 1910 and 75,994,575 in 1900. This was an increase of only 14.9 per cent during the last decade as compared with an increase of 21 per cent during the preceding decade. The tendency of the population from country to city was greatly accentuated after 1910. In 1920 more than one-half of the entire population was living in urban territory, that is to say, 54,816,209 or 51.9 per

cent were living in incorporated places of 2,500 inhabitants or more. At the Census of 1910 only 46.3 per cent were living in urban territory. In 1920, 9.3 per cent of the total population lived in incorporated places of less than 2,500 and 38.8 per cent lived in purely country districts, whereas at the Census of 1910 the population living in incorporated places of less than 2,500 was 8.8 per cent, while in purely country districts the population formed 44.8 per cent. The population living in urban territory increased after 1910 by 12,192,826 and the portion living in rural territory by 1,518,016. The annual excess of births over deaths in the country was roughly estimated at 1 per cent. The table below shows the preliminary estimates of population by States for 1920, together with census figures of 1900 and 1910.

The large falling off in the rate of growth for the country as a whole, as shown by these figures, is due mainly to an almost complete cessation of immigration for more than five years preceding the taking of the census in January last, and in some degree also to an epidemic of influenza, and to the casualties resulting from the world war. The population in the respective outlying possessions of the United States is shown in table on next page.

POPULATION OF THE UNITED STATES, BY STATES: 1920, 1910, AND 1900

STATE	Population			Increase * 1910-1920		Decrease * 1900-1910	
	1920	1910	1900	Number	P. Ct.	Number	P. Ct.
United States	105,708,771	91,972,266	75,994,575	13,736,505	14.9	15,977,691	21.0
Alabama	2,848,174	2,138,093	1,828,697	210,081	9.8	809,396	16.9
Arizona	833,903	204,354	122,931	129,549	63.4	81,423	66.2
Arkansas	1,752,204	1,574,449	1,311,564	177,755	11.3	262,885	20.0
California	3,426,861	2,377,549	1,485,053	1,049,312	44.1	892,496	60.1
Colorado	989,629	799,024	539,700	140,605	17.6	259,324	48.0
Connecticut	1,380,631	1,114,756	908,420	265,875	23.9	206,336	22.7
Delaware	223,003	202,322	184,735	20,681	10.2	17,587	9.5
District of Columbia	437,571	331,069	278,718	106,502	32.2	52,351	18.8
Florida	968,470	752,619	528,542	215,851	28.7	224,077	42.4
Georgia	2,895,832	2,609,121	2,216,381	286,711	11.0	392,790	17.7
Idaho	431,866	325,594	161,772	106,272	32.6	163,822	101.3
Illinois	6,485,280	5,638,591	4,821,550	846,689	15.0	817,041	16.9
Indiana	2,930,390	2,700,876	2,516,462	229,514	8.5	184,414	7.3
Iowa	2,404,021	2,224,771	2,281,853	179,250	8.1	—7,082	—0.3
Kansas	1,769,257	1,690,949	1,470,495	78,308	4.6	220,454	15.0
Kentucky	2,416,630	2,289,905	2,147,174	126,725	5.5	142,731	6.6
Louisiana	1,798,509	1,656,388	1,381,625	142,121	8.6	274,763	19.9
Maine	768,014	742,371	694,466	25,643	3.5	47,905	6.9
Maryland	1,449,661	1,295,346	1,188,044	154,315	11.9	107,302	9.0
Massachusetts	3,852,356	3,366,416	2,805,346	485,940	14.4	561,070	20.0
Michigan	3,668,412	2,810,173	2,420,982	858,239	30.5	389,191	16.1
Minnesota	2,387,125	2,075,708	1,751,394	311,417	15.0	324,314	18.5
Mississippi	1,790,618	1,797,114	1,551,270	—6,496	—0.4	245,844	15.8
Missouri	3,404,055	3,293,335	3,108,665	110,720	3.4	186,670	6.0
Montana	548,889	376,053	243,329	172,836	46.0	132,724	54.5
Nebraska	1,296,372	1,192,214	1,066,300	104,158	8.7	125,914	11.8
Nevada	77,407	81,875	42,335	—4,468	—5.5	39,540	93.4
New Hampshire	443,083	430,572	411,588	12,511	2.9	18,984	4.6
New Jersey	3,155,900	2,537,167	1,883,669	618,733	24.4	653,496	34.7
New Mexico	360,350	327,301	195,310	33,049	10.1	131,991	67.6
New York	10,384,829	9,113,614	7,268,894	1,271,215	13.9	1,844,720	25.4
North Carolina	2,559,123	2,206,287	1,893,810	352,836	16.0	312,477	16.5
North Dakota	645,680	577,056	319,146	68,624	11.9	257,910	80.8
Ohio	5,759,394	4,767,121	4,157,545	992,273	20.8	609,576	14.7
Oklahoma	2,028,283	1,657,155	790,391	371,128	22.4	866,764	109.7
Oregon	783,389	672,765	413,536	110,624	16.4	259,229	62.7
Pennsylvania	8,720,017	7,665,111	6,302,115	1,054,906	13.8	1,362,996	21.6
Rhode Island	604,397	542,610	428,556	61,787	11.4	114,054	26.6
South Carolina	1,683,724	1,515,400	1,340,316	168,324	11.1	175,084	13.1
South Dakota	636,547	583,888	401,570	52,659	9.0	182,318	45.4
Tennessee	2,337,885	2,184,789	2,020,616	153,096	7.0	164,173	8.1
Texas	4,663,228	3,896,542	3,048,710	766,686	19.7	847,832	27.8
Utah	449,396	373,351	276,749	76,045	20.4	96,602	34.9
Vermont	352,428	355,956	343,641	—3,528	—1.0	12,315	3.6
Virginia	2,309,187	2,061,612	1,854,184	247,575	12.0	207,428	11.2
Washington	1,356,621	1,141,990	518,103	214,631	18.8	623,887	120.4
West Virginia	1,463,701	1,221,119	958,800	242,582	19.9	262,319	27.4
Wisconsin	2,632,067	2,333,860	2,069,042	298,207	12.8	264,818	12.8
Wyoming	194,402	145,965	92,531	48,437	33.2	53,434	57.7

* A minus sign (—) denotes decrease.

POPULATION OF THE UNITED STATES AND OUTLYING POSSESSIONS: 1920 AND 1910

Area	Population	
United States with outlying possessions	117,857,509	101,146,530
Continental United States	105,708,771	91,972,266
Outlying possessions	12,148,738	9,174,264
Alaska	54,899	64,856
American Samoa	8,056	* 7,251
Guam	13,275	11,806
Hawaii	255,912	191,909
Panama Canal Zone	22,858	* 62,810
Porto Rico	1,299,809	1,118,012
Military and naval, etc., service abroad	117,238	55,608
Philippine Islands	† 10,350,640	‡ 7,635,426
Virgin Islands of the United States	§ 26,051	¶ 27,086

* Population in 1912.

† Population in 1918.

‡ Population in 1903.

§ Population in 1917.

¶ Population in 1911.

The average density of population throughout the United States, exclusive of outlying possessions, in 1920 was 35.5 persons per square mile of land area, as against 30.9 in 1910, 25 in 1900, and 21.2 in 1890. The density in the individual States in 1920 ranged from seven-tenths of one per square mile in Nevada to 566.4 in Rhode Island. It exceeded 200 per square mile in five States, namely, Rhode Island, with 566.4; Massachusetts, 479.2; New Jersey, 420; Connecticut, 286.4; and New York, 217.9. In five other States the density was greater than 100 but less than 200; in 27 States it ranged between 10 and 100; and in 11 States it was less than 10. The last-mentioned 11 States all lie west of the Mississippi River, and eight of them are in the Rocky Mountain division.

AGRICULTURE. The detailed discussion under the title **AGRICULTURE** covers the general statistics for agricultural production in the United States and its dependencies; and the articles on the individual States and territories contain paragraphs on **AGRICULTURE**, which give the acreage, production and value of the more important crops in 1920. Special articles are carried on the various crops such as **WHEAT**, **RYE**, **BARLEY**, **CORN**, **HAY**, **POTATOES**, etc. See also, in connection with Agriculture in the United States, the following articles: **AGRICULTURAL EDUCATION**; **AGRICULTURAL EXPERIMENT STATIONS**; **AGRICULTURAL EXTENSION WORK**; **AGRICULTURAL LEGISLATION**; **DAIRYING and FERTILIZERS**; **FOOD AND NUTRITION**; **HORTICULTURE**; **LIVE-STOCK**; **SOILS**; **AGRICULTURE, UNITED STATES DEPARTMENT OF**. See also the article **FORESTRY**.

MANUFACTURES. All the leading manufacturing industries in the United States are treated under separate titles, such as **AUTOMOBILES**; **BOOTS AND SHOES**; **IRON AND STEEL**; **PAPER**; **RUBBER**; **SHIPBUILDING**; **TEXTILE INDUSTRY**, etc. For engineering works, etc., see articles: **AQUEDUCTS**; **BRIDGES**; **CANALS**; **DOCKS and HARBORS**, **SHIPBUILDING**, etc.

MINERAL PRODUCTION. For information concerning the mineral production in 1919 and 1920, see the article, **MINERAL PRODUCTION**. The State articles also contain paragraphs on *Mineral Production*, where there were any mining activities of note. Separate articles appear on the more important minerals mined in the United States. In this connection, see such articles as: **COPPER**; **GOLD**; **IRON AND STEEL**; **LEAD**; **PLATINUM**; and **SILVER**.

EDUCATION. For information relating to ed-

ucation, see the articles on **EDUCATION IN THE UNITED STATES** and **UNIVERSITIES AND COLLEGES**. Under separate headings will be found statistical articles dealing with the most important colleges of the United States, such as: **HARVARD**; **YALE**; **PRINCETON**, etc.

RELIGION. Statistics and other material relating to the various denominations in the United States will be found under such headings as: **PRESBYTERIAN CHURCHES**; **PROTESTANT EPISCOPAL CHURCH**; **ROMAN CATHOLIC CHURCH**; **UNITARIANS**, etc.

OUTLYING POSSESSIONS. For outlying possessions of the United States see the articles, **ALASKA**; **GUAM**; **HAWAII**; **PHILIPPINES**; **PORTO RICO**; and for other countries with which the United States government has been in close administrative relation, see **DOMINICAN REPUBLIC**; **HAITI**; **CUBA**.

FOREIGN COMMERCE. The largest exports, as well as imports in any calendar year were shown by the government figures published at the close of the year and given below in detail. Exports in 1920 were \$8,228,000,000 against \$7,920,000,000 in 1919, an increase of 4 per cent in the year and three and one-third times the exports in the calendar year 1913. Exports in December, 1920, amounted to \$720,000,000 against \$677,000,000 in November, 1920, and \$681,000,000 in December, 1919. Imports in 1920 amounted to \$5,279,000,000 against \$3,904,000,000 in 1919, an increase of 35 per cent over 1919 and nearly three times the imports in the calendar year 1913, the last year before the war. Imports amounted to \$266,000,000 in December, 1920, compared with \$321,000,000 in November and \$381,000,000 in December, 1919. The excess of exports over imports amounted to \$454,000,000 in December and to \$2,949,000,000 in the calendar year 1920, compared with an excess of \$301,000,000 in December and \$4,016,000,000 in the calendar year 1919. The excess of exports averaged about \$3,000,000,000 in the calendar years 1916, 1917, 1918 and 1920, this amount having been exceeded by one billion dollars in the year 1919. Imports of gold amounted to \$429,000,000 in 1920 against \$77,000,000 in 1919, while exports of gold were \$322,000,000 in 1920 compared with \$368,000,000 in 1919. Silver imports in 1920 were \$88,000,000 compared with \$89,000,000 in 1919 and silver exports \$114,000,000 in 1920 against \$239,000,000 in 1919. Imports and exports by countries are shown on pages 686 to 687.

		TWELVE MONTHS ENDING DECEMBER			
COUNTRIES	EUROPE	<i>Imports</i>		<i>Exports</i>	
		1919	1920	1919	1920
Austria			\$1,792,418		\$19,237,495
Austria-Hungary		\$2,417,850		\$42,211,564	
Azores, and Madeira Islands		1,670,322	2,615,094	605,481	1,183,084
Belgium		7,700,100	47,443,156	377,883,308	282,479,776
Bulgaria		2,097,928	5,899,383	1,788,125	1,785,181
Czechoslovakia			10,159,776		7,077,579
Denmark		6,201,750	20,573,746	163,957,478	85,074,449
Finland		1,215,361	5,189,887	21,813,029	18,745,260
France		123,819,225	165,654,703	893,359,996	676,193,257
Germany		10,608,141	88,836,280	92,761,314	311,437,377
Gibraltar		37,178	417,303	42,778,023	17,626,990
Greece		28,599,669	20,144,612	42,798,610	39,462,042
Hungary			185,504		1,487,242
Iceland, and Faroe Islands		542,752	946,196	3,457,622	1,310,782
Italy		59,060,065	75,357,579	442,676,842	371,767,274
Malta, Gozo, etc.		51,602	83,620	621,676	1,315,400
Netherlands		75,506,608	95,226,976	255,098,740	246,451,597
Norway		7,371,249	21,627,230	135,134,594	94,661,767
Poland and Danzig			739,114		69,929,171
Portugal		6,414,961	9,323,165	19,961,948	24,426,582
Roumania			22,311	6,588,432	11,093,037
Russia in Europe		2,953,480	1,825,390	80,259,745	15,446,832
Serbia, Montenegro, and Albania				2,927,724	
Spain		49,494,954	42,513,051	102,819,699	151,440,032
Sweden		13,722,931	31,612,153	133,069,131	114,780,361
Switzerland		27,687,818	54,556,098	76,145,554	44,909,719
Turkey in Europe		14,165,285	11,176,999	20,390,204	31,330,913
United Kingdom:					
England		267,624,665	435,582,247	2,125,167,540	1,673,954,263
Scotland		25,846,085	40,058,193	118,136,042	108,766,672
Ireland		15,718,515	38,206,364	35,253,942	42,309,012
Total United Kingdom		\$309,189,265	\$513,846,804	\$2,278,557,524	\$1,825,029,947
Yugoslavia, Albania, and Fiume			73,597		972,041
Total Europe		\$750,528,389	\$1,227,842,145	\$5,187,666,363	\$4,466,655,197
NORTH AMERICA					
Bermuda		1,092,669	1,568,841	2,375,950	4,143,056
British Honduras		2,791,479	3,685,056	2,918,393	3,398,335
Canada		494,696,548	611,788,418	734,244,319	971,854,093
Central American States:					
Costa Rica		6,581,789	10,133,282	4,920,724	9,887,108
Guatemala		12,115,065	20,076,519	8,391,535	10,202,620
Honduras		7,415,688	8,306,364	7,691,928	15,361,919
Nicaragua		5,496,275	7,971,426	6,694,597	9,542,964
Panama		7,395,029	8,272,586	22,019,316	33,333,155
Salvador		4,146,113	11,915,320	5,924,418	8,148,018
Total Central American States		\$43,149,859	\$66,675,497	\$55,652,518	\$86,475,784
Greenland		106,500	210,000	19,036	20,302
Mexico		148,926,376	180,191,075	131,455,101	207,854,197
Miquelon, Langley, etc.		571		496,749	222,035
Newfoundland and Labrador		5,361,441	2,545,234	15,189,805	12,723,025
West Indies:					
British—					
Barbados		612,011	2,266,577	3,870,423	4,740,661
Jamaica		5,173,204	7,299,615	11,105,525	18,447,679
Trinidad and Tobago		7,687,110	9,292,980	7,777,187	13,592,622
Other British		2,894,045	4,243,017	4,726,939	9,656,342
Cuba		418,610,263	721,695,905	278,391,222	515,082,549
Dominican Republic		12,190,302	33,878,099	18,740,756	45,528,750
Dutch		3,126,999	4,431,950	1,914,587	3,544,468
French		56,321	168,480	8,781,391	7,958,820
Haiti		9,705,147	8,973,534	16,327,848	19,900,380
Virgin Islands of the U. S.		1,593,120	4,541,786	1,804,117	3,993,478
Total North America		\$1,157,773,965	\$1,663,451,064	\$1,295,791,866	\$1,929,136,576
SOUTH AMERICA					
Argentina		199,158,401	207,776,868	155,899,390	213,725,984
Bolivia		2,434,750	227,587,594	114,696,309	156,740,365
Brazil		233,570,620	10,495,298	4,771,177	4,573,381
Chile		82,442,364	120,515,599	53,121,087	55,310,465
Colombia		42,911,409	53,644,022	24,143,646	59,142,277
Ecuador		8,966,435	14,479,903	7,500,603	12,244,165
Falkland Islands				170,123	20,597
Guiana:					
British		399,110	4,817,126	5,124,215	6,991,951
Dutch		904,920	580,229	1,547,238	2,393,142
French			76,767	1,085,607	1,044,396
Paraguay		1,031,414	1,179,992	894,271	1,813,798
Peru		33,111,352	63,780,964	26,945,191	47,037,128
Uruguay		50,483,828	33,780,647	31,419,669	33,720,550
Venezuela		32,110,785	22,388,862	14,429,202	29,151,969
Total South America		\$687,525,388	\$761,053,871	\$441,747,728	\$623,910,163

TWELVE MONTHS ENDING DECEMBER

COUNTRIES	Imports		Exports	
	1919	1920	1919	1920
ASIA				
Aden	\$5,175,298	\$4,280,609	\$1,659,262	\$1,749,569
China	154,684,974	192,705,982	105,539,583	145,736,732
Kwantung, leased territory	15,492,291	11,516,153	12,735,007	7,138,720
Chosen	335,073	110,384	3,383,471	2,929,125
East Indies:				
British—				
British India	140,081,000	176,073,650	67,505,528	99,857,517
Straits Settlements	145,862,447	191,778,691	12,134,504	18,984,678
Other British	36,206,826	38,186,388	1,874,326	3,220,500
Dutch	78,743,591	167,415,935	46,576,489	59,078,192
French Indo China	1,623,936	2,555,903	1,474,953	2,558,127
Portuguese	17	7,492	8,986	
Hongkong	22,118,739	45,859,517	22,092,880	25,907,033
Japan	409,853,213	414,654,623	366,364,403	377,961,896
Persia	1,453,152	3,932,600	908,594	749,722
Russia in Asia	6,709,608	10,655,196	52,176,440	13,280,886
Siam	223,827	453,301	1,937,977	1,593,104
Turkey in Asia	22,837,717	28,589,937	4,841,518	10,916,885
Other Asia	42,420	31,830	2,360	282,859
Total Asia	\$1,041,444,129	\$1,288,800,699	\$701,164,787	\$771,954,431
OCEANIA				
British Oceania:				
Australia	58,157,718	45,982,498	95,085,059	119,912,558
New Zealand	21,329,035	25,568,389	28,171,585	48,754,264
Other British	4,736,956	3,368,423	725,354	1,007,428
French Oceania	2,307,201	3,169,678	1,289,193	1,587,422
Philippine Islands	66,289,336	112,950,779	70,551,953	99,830,055
Other Oceania	2,085,169	1,925,471	313,717	349,883
Total Oceania	\$154,905,415	\$192,965,238	\$196,136,861	\$271,441,610
AFRICA				
Abyssinia	5	336	9,612	41,844
Belgian Kongo	473,254	254,249	2,868,096	947,373
British Africa:				
West	26,503,744	16,886,881	13,538,363	17,199,944
South	38,815,763	20,616,766	44,042,000	60,989,159
East	839,040	6,639,588	1,872,393	2,698,450
Canary Islands	164,546	205,650	1,497,657	3,159,499
Egypt	39,628,681	97,015,056	15,075,775	38,123,387
French Africa	2,508,237	3,470,258	10,834,272	28,079,168
Italian Africa	495,923	429,717	352,311	405,456
Kamerun, etc.	89,274	65,307	462,349	967,407
Liberia	172,765	16,258	212,996	288,254
Madagascar	106,267	2,059,406	525,459	448,597
Morocco	717,774	865,023	1,412,224	5,085,985
Portuguese Africa	1,672,373	1,760,582	5,131,859	7,183,221
Spanish Africa		117	83,019	96,027
Total Africa	\$112,187,646	\$150,285,194	\$97,918,885	\$165,661,771
Grand total	\$3,904,364,932	\$5,279,398,211	\$7,920,425,990	\$8,228,759,748

The following table gives the value of the imports and exports into and from the United States, by great groups, during the twelve months ending December:

Groups	Twelve Months ending December		Exports	
	1920	1919	Twelve months ending December	
IMPORTS				
Crude materials for use in manufacturing...	\$1,752,876,383	\$1,674,541,857	Crude materials for use in manufacturing...	1,870,827,423
Foodstuffs in crude condition & food animals	577,628,024	545,800,441	Foodstuffs in crude condition & food animals	678,863,413
Foodstuffs partly or wholly manufactured.	1,238,152,414	555,808,185	Foodstuffs partly or wholly manufactured.	1,116,960,679
Manufactures for further use in manufacturing	802,024,195	608,996,213	Manufactures for further use in manufacturing	922,245,741
Manufactures ready for consumption	877,123,247	493,202,962	Manufactures ready for consumption	3,204,382,199
Miscellaneous	31,593,948	26,515,274	Miscellaneous	11,763,129
Total imports	\$5,279,398,211	\$3,904,364,932	Total domestic exports	\$8,080,818,455
			Foreign m'e'd'e exported	147,941,293
			Total exports	\$8,228,759,748

SHIPPING. The accompanying table shows the net tonnage entered and cleared in the foreign trade in 1919 and 1920:

Countries from which entered	1919			1920		
	American	Foreign	Total	American	Foreign	Total
Europe	3,769,710	13,583,957	17,353,667	7,196,429	16,823,609	23,820,038
North America	16,411,974	8,259,105	24,671,079	21,453,783	11,667,853	33,121,636
South America	977,214	979,210	1,956,424	1,747,803	1,182,123	2,929,926
Asia	424,379	1,426,882	1,851,261	1,055,225	1,715,221	2,770,446
Oceania	289,914	233,661	523,575	326,168	286,083	612,251
Africa	59,471	286,197	345,668	346,241	524,193	870,434

Countries from which cleared	American	Foreign	Total	American	Foreign	Total
Europe	6,010,148	13,863,195	19,873,343	7,825,420	16,941,390	24,766,810
North America	16,381,850	8,884,968	24,766,818	21,924,106	11,716,824	33,639,930
South America	1,608,590	1,859,620	2,968,210	2,849,725	2,188,728	4,488,453
Asia	653,272	1,724,829	2,378,101	1,208,890	1,686,447	2,893,367
Oceania	206,888	568,877	775,765	336,157	585,227	921,384
Africa	131,328	363,086	494,414	389,680	722,948	1,111,628

TERRITORIAL COMMERCE. The accompanying States and her non-contiguous territories in the table shows the commerce between the United calendar years 1919 and 1920:

	Shipments from the United States to Noncontiguous Territories Twelve months ending December— 1919	Shipments from the United States to Noncontiguous Territories Twelve months ending December— 1920	Shipments to the United States from Noncontiguous Territories Twelve months ending December— 1919	Shipments to the United States from Noncontiguous Territories Twelve months ending December— 1920
DOMESTIC AND FOREIGN MERCHANDISE				
Alaska	\$37,476,232	\$36,876,855	\$60,479,548	\$60,939,061
Hawaii	49,983,869	74,052,453	98,863,015	192,383,185
Porto Rico	67,799,541	121,561,574	78,820,180	158,822,088
Guam	329,430	986	.....	.....
American Samoa	152,708	275,095	.....	.....
Grand total	\$155,741,780	\$232,766,918	\$237,162,748	\$411,644,329

CONDITION OF THE TREASURY, JUNE 30, 1920. The public debt of the United States at the

close of the fiscal year 1920 is in detail as follows:

CONDITION OF THE TREASURY, JUNE 30, 1920

Interest-bearing debt:

Loan of 1925, 4 per cent.	\$118,489,900.00
Consols of 1930, 2 per cent.	599,724,050.00
Panama Canal loan, 2 per cent.	74,901,580.00
Panama Canal loan, 3 per cent.	50,000,000.00
Postal savings bonds, 2½ per cent.	11,539,860.00
Conversion bonds, 3 per cent.	28,894,500.00
Certificates of indebtedness	2,768,925,500.00
War savings certificates	827,419,021.38
First Liberty loan, 3½ per cent.	1,410,074,400.00
First Liberty loan converted, 4 per cent.	65,803,050.00
First Liberty loan converted, 4½ per cent.	478,089,200.00
First Liberty loan second converted, 4½ per cent.	3,492,150.00
Second Liberty loan, 4 per cent.	240,003,250.00
Second Liberty loan converted, 4½ per cent.	3,085,303,750.00
Third Liberty loan, 4½ per cent.	3,662,715,800.00
Fourth Liberty loan, 4½ per cent.	6,394,354,500.00
Victory Liberty loan, 3½ and 4½ per cent.	4,246,365,350.00
	\$24,061,095,361.38

Debt on which interest has ceased:

Funded loan of 1891	20,800.00
Loan of 1904	13,050.00
Funded loan of 1907	384,400.00
Loan of 1908-1918	519,860.00
Refunding certificates	10,410.00
Old debt	898,680.28
Certificates of indebtedness, matured	4,900,500.00
	\$6,747,700.26

Debt bearing no interest:

United States notes (greenbacks), less gold reserve	193,701,990.37
Bank notes, redemption account	29,478,280.00
Old demand notes	53,012.50
Fractional currency	6,842,067.04
	\$230,075,349.91

Total interest and non-interest-bearing debt, exclusive of certificates and notes offset by coin and bullion (gross debt)

\$24,297,918,411.53

ASSETS

<i>Cash in the Treasury June 30, 1920</i> (From revised statements)	
Reserve fund:	
Gold coin and bullion	\$152,979,025.63
Trust funds:	
Gold coin and bullion	584,723,645.00
Silver dollars	118,257,883.00
Silver dollars of 1890	1,656,227.00
	\$704,637,755.00

Gold settlement fund, Federal Reserve Board:

Gold coin and bullion

\$1,184,275,551.87

General fund:

In Treasury offices—

Gold coin	\$249,981,700.36
Standard silver dollars	14,935,674.00
United States notes	9,567,164.00
Federal reserve notes	27,622,396.00
Federal reserve bank notes	853,402.00
National bank notes	1,629,666.80
Certified checks on banks	475,834.81
Subsidiary silver coin	6,605,098.65
Minor coin	1,076,790.26
Silver bullion (at cost)	19,516,565.10
Unclassified (unassorted currency, etc.)	5,833,638.84
Public debt paid, awaiting reimbursement	1,242,638.03
	\$388,840,458.85

In Federal land banks

5,950,000.00

In Federal reserve banks

30,488,519.22

In transit

8,545,005.29

\$39,028,524.51

In special depositories—

Account of sales of certificates of indebtedness

\$273,428,577.33

In national bank depositories—

To credit of Treasurer of the United States	11,863,207.11
To credit of other government officers	15,138,161.88
In transit	11,598,446.06
	\$38,599,815.05

In treasury of Philippine Islands—

To credit of Treasurer of the United States

1,986,669.06

To credit of other government officers

2,785,579.60

\$798,910.54

In foreign depositories—

To credit of Treasurer of the United States

8,301,507.40

\$704,947,793.68

LIABILITIES

Deduct current liabilities—

National bank note 5 per cent. fund	\$21,332,789.12
Less notes in process of redemption	21,332,789.12
Treasurer's checks outstanding	468,273.36
Post Office Department balance	35,838,627.79
Board of trustees, Postal Savings System balance	7,791,054.64
Balance to credit of postmasters, clerks of court, etc.	33,974,101.19
	1 Credit balance.

CONDITION OF THE TREASURY JUNE 30, 1920

Undistributed assets of insolvent national banks	\$1,168,284.92
Deposits for—	
Redemption of Federal reserve notes (5 per cent fund, gold)	237,195,574.39
Redemption of Federal reserve bank notes (5 per cent fund)	9,449,759.00
Retirement of additional circulating notes, act of May 30, 1908	138,860.00
Miscellaneous redemption accounts	18,978,238.09
	<hr/> \$345,000,773.35
Balance in the Treasury, June 30, 1920, as per Financial Statement of the United States Government	359,947,020.38

RECEIPTS AND DISBURSEMENTS. The following table shows receipts and expenditures from April 5, 1917 to October 31, 1920.

DISBURSEMENTS	
Disbursements, exclusive of principal of public debt, April 6, 1917, to October 31, 1920	\$40,508,159,824.95
Public debt disbursements April 6, 1917, to October 31, 1920	43,888,827,878.10
Net balance in the general fund October 31, 1920	203,652,027.01
	<hr/> \$84,600,639,780.06

INCREASE OF DEBT IN WAR PERIOD. The following table shows disbursements and receipts and increase of debt in war period:

PUBLIC DEBT AND EXPENDITURES	
Total disbursements for war period, exclusive of principal of public debt	\$40,508,159,824.95
Total receipts for war period, exclusive of principal of public debt	17,838,953,165.01
	<hr/>
Excess of disbursements over receipts, for war period ..	\$22,669,206,659.94

ARMY AND NAVY. The Army and Navy are treated under various heads such as MILITARY PROGRESS; NAVAL PROGRESS; AERONAUTICS; SHIP-BUILDING; SHIPPING, etc. See also below under *Congress*, etc.

POST OFFICE. The revenues of the Postal Service for the fiscal year ending June 30, 1920, including the revenues from money-order and postal-savings business, amounted to \$437,150,212.33. During the preceding fiscal year the receipts were \$436,239,126.20, which, however, included collections of \$71,392,000 as a war tax derived from increased postage on first-class mail, the ordinary postal receipts for 1919 having been \$364,847,126.20. For comparative purposes, therefore, it may be said that the postal income for 1920 showed an increase of \$72,303,086.13 over the preceding year—war tax excluded—the rate of increase being 19.81 per cent. The audited expenditures for the year were \$454,322,609.21, an increase over the preceding year of \$91,824,973.52, or 25.33 per cent. The audited expenditures for the fiscal year were therefore

in excess of the revenues in the sum of \$17,172,396.88. After deducting losses of postal funds by fire, burglary, and other causes amounting to \$98,085.84, the total audited deficiency in postal revenues for the fiscal year is \$17,270,482.72. The expenditures included approximately \$33,202,600, additional, paid as a war bonus to postal employees in excess of the regular basic salaries, and \$35,698,400 authorized by special act of Congress in joint resolution no. 151, granting them an increased compensation for the year, and making a total increase in salaries of approximately \$68,901,000. This joint resolution was not recommended or approved by the Postmaster-General, who believed that it gave a blanket increase to thousands of employees who were already amply compensated.

There was a remarkable increase in the volume of business during the year, placed by the Postmaster-General at 10.81 per cent as compared with an average increase during the preceding 15 years of about 5.88 per cent.

RECEIPTS	
Net balance in the general fund April 5, 1917	\$92,317,710.27
Receipts, exclusive of principal of public debt, April 6, 1917, to October 31, 1920	17,838,953,165.01
Public debt receipts April 6, 1917, to October 31, 1920	66,669,368,854.78
	<hr/> \$84,600,639,780.06

The Air Mail Service operated during the fiscal year with increased efficiency, increased saving in car space, and greater expedition of the mail

Total gross debt October 31, 1920 ..	\$24,062,509,672.96
Total gross debt April 5, 1917	1,281,968,696.28
	<hr/>
Gross debt increase for war period	\$22,780,540,976.68
Net balance in the general fund Oct. 31, 1920 ..	\$203,652,027.01
Net balance in the general fund April 5, 1917 ..	92,317,710.27
	<hr/>
Net increase in balance in general fund	111,334,316.74
Net debt increase for war period	\$22,669,206,659.94

through the extension of the service to additional commercial centres. There were three extensions of the service—one from New York to Cleveland—as discussed in the previous annual report. Through this extension the service was completed from New York to Chicago. Regular night flying with the mail was not practicable with the existing types of planes in the mountain section, but it was practicable in the level country of the Middle West, and the department was making preparations in the way of lighting regular and emergency landing fields and equipping planes with magnesium flares. It was promised that this service would be begun in the early spring between Chicago and Cheyenne, Wyo., and would result in delivering mail from New York to Cheyenne within 24 hours. The run from Cheyenne to San Francisco would then be a matter of 12 hours' flying. See AERONAUTICS, section on *United States Aerial Mail Service*.

The government-owned motor-vehicle service was gradually extended until on July 1, 1920, it was in operation in 163 cities. In 50 of

these six or more trucks were in use, while in the remainder of the cities less than six trucks were engaged in the transportation of mail. The service required 2806 trucks, ranging in size from three-eighths to five tons capacity. The number of supervisory officers, clerks, mechanics, chauffeurs, and garage men necessary in the operation and upkeep of these trucks totaled 3880. Government-owned service was being extended as rapidly as motor-truck equipment became available, and plans were made for the establishment of it at the close of the year in ten additional cities.

The Railway Mail Service was operated with increased efficiency under the space system. War conditions were overcome in the Foreign Mail Service which was brought back to normal. The Money Order Service and the Postal Savings System had rapidly recovered from war conditions and were in most satisfactory operation. The Rural Mail Service was extended during the fiscal year to more than 600,000 additional persons and the facilities of the service systematized and improved.

As to the Postal Savings Service the net amount remaining on deposit on June 30, 1920, was \$157,276,322, as compared with \$167,323,260 on deposit June 30, 1919. While this was net decrease in the amount on deposit, it is to be noted that during the year there was a greater amount deposited with the system than during any previous fiscal year. The decrease during the year was accounted for by the fact that the withdrawals from the service were much greater than during any other period, the majority of the patrons of the Postal Savings System being of foreign extraction, credited with about 75 per cent of the deposits, and being required to make remittances of larger sums of money than was formerly their custom to relatives and friends in Europe.

The Postmaster-General emphatically renewed his objections to the organization of government employees and his recommendation that organizations of postal employees be prohibited by law from affiliation with outside organizations.

PENSIONS. The amount paid out in pensions during the fiscal year ending June 30, was \$213,295,314, as compared with \$222,159,292 the year before. To pensioners in foreign countries \$1,280,581 was paid as compared with \$1,188,188 the year before. The following table shows the various classes on the pension roll, June 30, 1920:

Civil War—	
Soldiers	243,520
Widows	290,100
War with Spain—	
Soldiers	23,144
Widows	7,288
Indian wars—	
Survivors	3,745
Widows	2,483
Mexican War—	
Survivors	148
Widows	2,423
War of 1812, widows	71
By classes—	
Invalids	285,110
Widows	299,863
Dependents	4,422
Minors	2,273

Helpless children	913
Nurses	109
Total of all classes	592,190

Deaths of Civil War pensioners:

Soldiers	27,871
Widows, minor children, etc.....	20,874

A Civil War pension bill was signed by the President on May 1 raising the pension of veterans to \$50 per month and providing for total disability, \$72; for the loss of limbs, \$60 to \$90; for widows, \$30; for each child, \$6. There was an increase also to veterans of the Spanish-American war and of the Philippine insurrections. This act was approved June 5. The Sterling-Lehlback law providing old-age pensions for Federal civil service employees was approved by the President, May 22. See OLD-AGE PENSIONS.

PATENTS. The total number of applications for patents for inventions during the fiscal year ending 1920 was 81,948, as compared with 62,755 in 1919. Other applications during the fiscal year 1920 were as follows:

Patents for designs	4,110
Reissues of patents	322
Registration of trade-marks	14,710
Registration of labels	1,280
Registration of prints	570

The patents expired during the fiscal year numbered 29,329. The gains over the previous fiscal year in applications for mechanical patents, registration of trade-marks, and in total applications were, respectively, 19,193, 6149, and 27,283 in numbers and 30, 72, and 36 per cent in proportionate increases. The gain in actual numbers far exceeded any previous increase of business in any one fiscal year, and this gain was larger than the total receipts of any calendar year in the history of the Patent Office up to and including the year 1881. The gain in business in the number of printed copies of patents sold was 22 per cent; in deeds of assignment received for record, 34 per cent; and in words furnished of copies of records, 79 per cent. The receipts of money for copies of patents increased 84 per cent. It is to be noted that the increase of price of these copies from five cents to ten cents, required by the first deficiency appropriation act of November 4, 1919, was effective for a little more than half the year. The gain in receipts of money if increase of price had been effective the whole year would have amounted to 140 per cent. The total receipts of money increased 23.8 per cent, and the net deficit for the fiscal year 1919 of \$65,228.13 was turned into a net surplus of \$179,135.96, making a relative net increase of \$244,364.09 for the year.

BUREAU OF MINES. Among the activities of the respective divisions of the Bureau of Mines during the fiscal year 1920, as described in the Directors' report, the following may be noted:

The mining division of the bureau, in addition to its regular work of advising and assisting both the coal and metal mining industries toward better and safer practices, assisted in the codification and adoption of improved coal-mine laws for the State of Utah, and prepared and was putting into operation coal-mine regulations for coal leases on government lands. In addition, new coal-mine explosives were regularly tested and added to the permissible list of the bureau for use in gaseous or dusty mines; tests and

demonstrations of better methods of protection against the dangers from coal dust and methane (gas) underground were made in the experimental mine; and the geophone, an underground listening device developed during the war, was further perfected and adapted for use in mines. In metal mining, the outstanding feature was the investigations of harmful dusts and the need for better ventilation in many of the western metal mines. The results were helping toward adoption of modern ventilation methods at many western metal mines, and thus greatly promoting healthful working conditions for miners. In the fuel division, coöperative work with outside agencies enabled the division to make twofold use of the money appropriated for it, and the results were leading to the saving and the more efficient use of fuel, a saving that exceeds many times the money invested by the bureau. This division also concerned itself with mechanical and electrical machinery and apparatus in and around mines, and prepared model laws for the use of electricity underground. Further, the development of underground storage-battery locomotives justified the preparation by the bureau of a schedule of tests. In the division of mineral technology the production of mesothorium as a substitute for radium for certain commercial uses was accomplished, and researches on the use of special steels brought decided results that would promote greater use. The progress toward the production of helium on a commercial scale in coöperation with the War and the Navy Departments was marked. In its work of assisting development and conservation in the industry the bureau codified leasing and operating regulations for oil and gas lands in the public domain.

EMBASSIES AND LEGATIONS TO THE UNITED STATES:

Argentina—Tomas A. Le Breton, Ambassador extraordinary and minister plenipotentiary.

Belgium—Baron E. de Cartier de Marchienne, Ambassador extraordinary and minister plenipotentiary.

Bolivia—Alberto Cortedellas, Secretary of Legation and Chargé d'affaires ad interim.

Brazil—Augusto Cochrane de Alencar, Ambassador extraordinary and minister plenipotentiary.

Bulgaria—Stephen Panaretoff, Envoy extraordinary and minister plenipotentiary.

Chile—Don Beltran Mathieu, Ambassador extraordinary and minister plenipotentiary.

China—Vi Kyuin Wellington Koo, Envoy extraordinary and minister plenipotentiary.

Colombia—Dr. Carlos Adolfo Urueta, Envoy extraordinary and minister plenipotentiary.

Costa Rica—Absent.

Cuba—Dr. Carlos Manuel de Céspedes, Envoy extraordinary and minister plenipotentiary.

Czecho-Slovakia—Karel Halla, Counselor of legation and chargé d'affaires ad interim.

Denmark—Constantin Brun, Envoy extraordinary and minister plenipotentiary.

Dominican Republic—Manuel de J. Camacho, Consul-general of the Dominican Republic in New York City.

Ecuador—Don Rafael H. Elizalde, Envoy extraordinary and minister plenipotentiary.

Finland—Armas Herman Saastamoinen, Envoy extraordinary and minister plenipotentiary.

France—J. J. Jusserand, Ambassador extraordinary and plenipotentiary.

Great Britain—Sir Auckland Geddes, Ambassador extraordinary and plenipotentiary.

Greece—Georges Roussos, Envoy extraordinary and minister plenipotentiary.

Guatemala—Don Joaquín Méndez, Envoy extraordinary and minister plenipotentiary.

Haiti—Charles Moravia, Envoy extraordinary and minister plenipotentiary.

Honduras—Don J. Antonio López Gutierrez, Envoy extraordinary and minister plenipotentiary.

Italy—Baron Camillo Romano Avezzana, Ambassador extraordinary and plenipotentiary.

Japan—Baron K. Shidehara, Appointed Ambassador extraordinary and plenipotentiary.

Mexico—Dr. Salvador Diego-Fernandez, Minister plenipotentiary and chargé d'affaires ad interim.

Montenegro—General Antoine Gvosdenovitch, Envoy extraordinary and minister plenipotentiary (absent).

Netherlands—J. T. Cremer, Envoy extraordinary and minister plenipotentiary.

Nicaragua—Don Diego Manuel Chamorro, Envoy extraordinary and minister plenipotentiary.

Norway—H. H. Bryn, Envoy extraordinary and minister plenipotentiary.

Panama—Don J. E. Lefèvre, Secretary of legation and chargé d'affaires ad interim.

Paraguay—William Wallace White, Consul-general of Paraguay in New York City.

Persia—Mirza Abdul Ali Khan, Sadigh-es-Saltaneh, Envoy extraordinary and minister plenipotentiary.

Peru—Don Federico Alfonso Pezet, Ambassador extraordinary and plenipotentiary.

Poland—Prince Casimir Lubomirski, Envoy extraordinary and minister plenipotentiary.

Portugal—Viscount d'Alte, Envoy extraordinary and minister plenipotentiary.

Rumania—N. H. Lahovary, Secretary of legation and Chargé d'affaires ad interim.

Russia—Boris Bakhmetieff, Ambassador extraordinary and plenipotentiary.

Salvador—Don Salvador Sol, Envoy extraordinary and minister plenipotentiary.

Serbs, Croats and Slovenes—Dr. Slavko Y. Grouitch, Envoy extraordinary and minister plenipotentiary.

Siam—Phya Prabha Karavongse, Envoy extraordinary and minister plenipotentiary.

Spain—Don Juan Riaño y Gayangos, Ambassador extraordinary and plenipotentiary.

Sweden—J. de Lagerberg, secretary of legation.

Switzerland—Marc Peter, Envoy extraordinary and minister plenipotentiary.

Uruguay—Jacobo Varela, Envoy extraordinary and minister plenipotentiary.

Venezuela—Don Santos A. Dominici, Envoy extraordinary and minister plenipotentiary.

EMBASSIES AND LEGATIONS OF THE UNITED STATES:

Argentina—Frederic Jessup Stimson, Ambassador extraordinary and plenipotentiary.

Belgium—Brand Whitlock, Ambassador extraordinary and minister plenipotentiary.

Bolivia—S. Abbot Maginnis, Envoy extraordinary and minister plenipotentiary.

Brazil—Edwin V. Morgan, Ambassador extraordinary and minister plenipotentiary.

Bulgaria— ————, Envoy extraordinary and minister plenipotentiary.

Chile—Joseph H. Shea, Ambassador extraordinary and plenipotentiary.

China—Charles R. Crane, Envoy extraordinary and minister plenipotentiary.

Colombia—Hoffman Philip, Envoy extraordinary and minister plenipotentiary.

Costa Rica— ——— Envoy extraordinary and minister plenipotentiary.

Cuba—Boaz W. Long, Envoy extraordinary and minister plenipotentiary.

Czecho-Slovakia—Richard Crane, Envoy extraordinary and minister plenipotentiary.

Denmark—Joseph C. Grew, Envoy extraordinary and minister plenipotentiary.

Dominican Republic—William W. Russell, Envoy extraordinary and minister plenipotentiary.

Ecuador—Charles S. Hartman, Envoy extraordinary and minister plenipotentiary.

Egypt—Carroll Sprigg, Agent and consul-general.

Finland— ——— Envoy extraordinary and minister plenipotentiary.

France—Hugh Campbell Wallace, Ambassador extraordinary and minister plenipotentiary.

Great Britain—John W. Davis, Ambassador extraordinary and minister plenipotentiary.

Greece and Montenegro—Edward Capps, Envoy extraordinary and minister plenipotentiary.

Guatemala—Benton McMillin, Envoy extraordinary and minister plenipotentiary.

Haiti—Arthur Bailly-Blanchard, Envoy extraordinary and minister plenipotentiary.

Honduras— ——— Envoy extraordinary and minister plenipotentiary.

Italy—Robert Underwood Johnson, Ambassador extraordinary and minister plenipotentiary.

Japan—Roland S. Morris, Ambassador extraordinary and minister plenipotentiary.

Liberia—Joseph L. Johnson, minister resident and consul-general.

Mexico— ———, Ambassador extraordinary and minister plenipotentiary.

Montenegro—Edward Capps, Envoy extraordinary and minister plenipotentiary.

Morocco—Maxwell Blake, Agent and consul-general.

The Netherlands—William Phillips, Envoy extraordinary and minister plenipotentiary.

Nicaragua—Benjamin L. Jefferson, Envoy extraordinary and minister plenipotentiary.

Norway—Albert G. Schmedeman, Envoy extraordinary and minister plenipotentiary.

Panama—William J. Price, Envoy extraordinary and minister plenipotentiary.

Paraguay—Daniel F. Mooney, Envoy extraordinary and minister plenipotentiary.

Persia—John L. Caldwell, Envoy extraordinary and minister plenipotentiary.

Peru—William E. Gonzales, Envoy extraordinary and minister plenipotentiary.

Poland—Hugh S. Gibson, Envoy extraordinary and minister plenipotentiary.

Portugal—Thomas H. Birch, Envoy extraordinary and minister plenipotentiary.

Rumania—Charles J. Vopicka, Envoy extraordinary and minister plenipotentiary.

Salvador—Peter Augustus Jay, Envoy extraordinary and minister plenipotentiary.

Serbs, Croats, and Slovenes—H. Percival Dodge, Envoy extraordinary and minister plenipotentiary.

Siam—George W. P. Hunt, Envoy extraordinary and minister plenipotentiary.

Spain—Joseph F. Willard, Ambassador extraordinary and minister plenipotentiary.

Sweden—Ira Nelson Morris, Envoy extraordinary and minister plenipotentiary.

Switzerland—Hampson Gary, Envoy extraordinary and minister plenipotentiary.

Uruguay—Robert Emmet Jeffery, Envoy extraordinary and minister plenipotentiary.

Venezuela—Preston McGoodwin, Envoy extraordinary and minister plenipotentiary.

HOUSE RECORD: *Second Session*. The 66th Congress met on Dec. 1st, 1919, in its first regular session. The important proceedings down to the close of the year are given in the preceding volume of this YEAR BOOK.

The House met for the first time in 1920, on January 6, after the holiday period, and its chief proceedings with their dates were as follows:

January 10. The question of seating Victor Berger, Socialist Congressman-elect from Wisconsin, came up for a second time and was decided in the negative by a vote of 328 to 6.

January 15. The Post Office appropriation bill for \$460,000,000 was passed after the provision for the air mail service had been eliminated.

January 19. Considerable reduction in the Rivers and Harbors appropriation bill, amounting to about \$30,500,000 was effected January 23. The enlisted men's pay increase bill was passed by 311 to 10. It was to operate from Jan. 1, 1920 to July 1, 1921, and the pay was raised one-third. The measure was then referred to the Senate.

January 21. The diplomatic appropriation bill was reduced by \$3,085,125.

January 31. A bill authorizing \$50,000,000 for food relief in Europe was unanimously reported by the Ways and Means Committee.

February 9. The Democrats at their caucus took a definite stand on the question of military training after a letter had been read from the President recommending a moderate attitude and no action on the part of the party. It adopted by a vote of 106 to 17 a resolution favoring that no measure should be passed by this Congress providing for universal compulsory service or training.

February 10. The conference report on the oil land leasing bill was adopted.

February 18. The legislative and executive and judicial appropriation bill carrying \$104,120,000 was reported by the appropriations committee.

February 20. The military affairs committee voted by 11 to 9 in favor of postponing universal military training legislation.

February 21. The conference report on the Cummins-Esch railroad bill was carried by 250 to 150 over the protests of labor men and farmers.

February 25. A motion to repeal the Volstead prohibition enforcement law was defeated by 80 to 39.

March 4. A resolution to investigate the fixing of sugar prices was carried by 162 to 142. Another motion to repeal the Volstead act was defeated.

March 18. The army reorganization bill providing for 299,000 men and 17,800 officers was passed by 246 to 92.

March 21. The resolution declaring the state of war with Germany at an end was proposed by Mr. Porter (Republican) chairman of Committee of foreign affairs.

March 23. The naval appropriation bill carrying \$425,000,000 was passed. This provided the sum of \$104,000,000 for completing the 1916 construction programme and authorized for the navy an enlisted personnel of 125,000 sailors and 20,000 marines.

April 2. The Ways and Means Committee voted by 15 to 6 to report the soldier bonus

legislation and declared against a bond issue and in favor of a tax on sales for raising the necessary \$1,500,000,000.

April 9. The peace resolution repealing the special wartime measures and declaring the war at an end was passed by 242 to 150.

April 16. The Post Office appropriation bill carrying \$462,500,000 was passed. This included the sum of \$1,250,000 for establishing air mail routes.

April 20. The deficiency railway appropriation bill was passed carrying \$319,000,000, thus making the total railway appropriations to that date \$1,780,000,000.

April 30. Sterling-Lehlback Act providing old-age pensions for Federal civil service employees carried.

May 14. The appropriation bill which the President had vetoed on the ground that it encroached on the President's authority was reintroduced but failed to secure the necessary majority. Both Houses adopted the conference report on the service men's increased pay bill (see below, *Senate Record*).

May 27. The House passed a bill authorizing the Treasury to make a final settlement of the \$1,000,000,000 of back taxes.

May 31. The bill was passed permitting the union of farmers for the sale of produce, but limiting profits to eight per cent; vote, 233 to 58.

June 5. The session ended.

Third (Short) Session. The house reassembled on December 6.

December 13. By unanimous vote war legislation, including the Lever Act but excluding Trading with the Enemy, War Finance Corporation and Liberty Loan Acts, were repealed. The Johnson immigration bill which practically excluded aliens for a year was passed by a vote of 293 to 41.

December 18. The joint resolution revising the War Finance Corporation was passed by a vote of 212 to 61.

December 22. The Emergency Tariff bill chiefly designed for the aid of farmers passed by vote of 196 to 36 in which party lines were ignored.

December 23. The annual pension bill carrying the appropriation of \$265,500,000 was passed.

SENATE RECORD. *Second Session.*

January 15. The Water Power Development bill, similar to the one adopted by the House in July was passed by the Senate.

January 17. Beginning of Sims naval controversy (see below). Rear-Admiral Sims criticized Secretary Daniels' award of naval honors in hearing before the Senate naval sub-committee.

January 21. A resolution was adopted to the effect that all Thracian territory surrendered by Turkey and Bulgaria should be awarded to Greece and that an outlet for Bulgaria should be afforded on the Aegean Sea.

January 22. Documentary evidence was received by the Senate committee investigating Mexican relations indicating that border raids in 1915 had been instigated and directed by President Carranza and his aides.

January 26. By a vote of 36 to 14 the Americanization bill was passed carrying \$6,500,000, to stimulate the teaching of English and to give aliens the basis of Americanism. The Senate Military Committee approved the bill requiring military training between the ages of 18 and 21, and provided for an army of citizen soldiers,

a national guard, and 300,000 regulars. Senator Lodge notified the Democratic conferees that in a compromise on the treaty his reservations on Article X and the Monroe Doctrine must remain untouched.

February 3. The Army, Navy and Marine Corps and Coast Guard Increased Pay bill, carrying \$59,500,000 and granting 10 per cent increase to officers and 20 per cent to men, was passed.

February 5. Senator Gronna's bill to repeal war-time control over wheat prices was unanimously reported by the agricultural committee.

February 9. The Senate sustained by a vote of 63 to 9 Mr. Lodge's proposal to bring the treaty again before the Senate, and the treaty was then recommitted to the Foreign Relations Committee with instructions to report it with the Lodge reservations.

February 11. The amendment offered to the reservations of the peace treaty by by-partisan conferees were accepted by Senator Lodge. The President's chief supporter Mr. Hitchcock, Democrat, of Nebraska, refused to accept the reservations.

February 12. The conference report on the Oil Land Leasing bill was accepted.

February 13. Mr. Hitchcock offered alternative compromise reservations on Article X of the Covenant but these proposals were afterward rejected.

February 23. By a vote of 47 to 17, the conference report on the Railroad Reorganization bill was accepted.

February 26. The Lodge Mandate reservations to the Peace Treaty was adopted by 68 to 4.

March 3. The Lodge reservations relating to domestic questions and to the Monroe Doctrine were adopted.

March 4. By a vote of 48 to 21 the amended Lodge reservation on Shantung and by a vote of 55 to 14 the Walsh reservation on American representation were adopted.

March 5. By a vote of 41 to 22 the Lodge reservation on the reparations commission was adopted.

March 7. A letter from President Wilson declaring that the proposed reservations are "nullifications" was made public by Mr. Hitchcock.

March 9. The Lenroot reservation in regard to the equality of voting power on the part of the United States in the League of Nations was adopted.

March 12. A new compromise reservation on Article X was offered by Mr. Lodge.

March 15. The Lodge reservation on Article X was carried, all Republican members voting for it with one exception and 16 Democrats,—the final vote standing 56 to 26.

March 17. The Lenroot foreign policy reservation permitting freedom of action in future European disturbances was defeated by a vote of 25 to 39.

March 18. The reservation favoring self-termination for Ireland introduced by Senator Gerry, Democrat of Rhode Island, was adopted.

March 19. Ratification of the Treaty failed for the second time of the requisite two-thirds majority, the vote standing 49 to 35.

March 20. Sterling-Lehlback Act passed providing old-age pensions for Federal civil service employees.

March 22. The appointment of Bainbridge Colby as Secretary of State and that of Charles R. Crane as Minister to China were confirmed.

March 24. The Foreign Relations sub-committee recommended the equipment of an Armenian army by the United States; the sending of a warship and marines to Batum, and the taking of steps toward the recognition of the new republic.

March 26. Mr. Borah, Republican of Idaho, introduced a bill to limit to \$10,000 in any one State the campaign expenditures of a presidential candidate.

April 3. The bill permitting the control of discounts by the Federal Reserve Board through its twelve reserve banks was carried.

April 6. A project for an extensive navy base at San Francisco was approved.

April 9. Immediate investigation of the railroad strike was unanimously ordered. An investigation of the 1918 Newberry-Ford campaign in Michigan was ordered by the committee on privileges and elections. The voluntary military training plan was substituted for the compulsory plan by a vote of 49 to 9.

April 12. The plan for educational and vocational training was rejected, but provision was made for voluntary universal training between the ages of 18 and 21 instead of 18 and 28.

April 14. A report was made on Russian propaganda in the United States by the Foreign Relations Committee.

April 20. The Army Reorganization bill was passed by a vote of 46 to 10 and was sent to conference. This measure among other features provided for the reform of courts martial, and the change of the status of the National Guard to that of a part of the unified army, the size of the latter being reduced to 280,000 men and 17,043 officers; also for voluntary military training between the ages of 18 and 23.

April 26. The Rivers and Harbors bill, carrying \$24,000,000, which was double the amount appropriated by the House, was passed.

April 27. Immediate action to relieve the sugar shortage and for the prosecution of profiteers was demanded. The Democratic minority elected unanimously Oscar W. Underwood of Alabama as leader.

April 28. The Naval Appropriations bill was passed including \$4,000,000 increase for building and an increase of the aviation appropriation from \$15,876,000 to \$25,000,000. Plans were made for developing California Naval Oil land reservations. The joint peace resolution of Mr. Knox to restore peace conditions by repealing the declaration of war against Germany and Austria was reported out of committee.

May 10. The resolution for the removal of the New York State canal from government operation and control was passed.

May 14. The Senate and House jointly adopted the conference report on the service-men's increased pay bill and the measure went to the President.

May 15. By a vote of 43 to 38 the Knox peace resolution was adopted and sent to the House as a substitute for the peace resolution adopted by the House on April 29. Three Democrats voted with the Republicans.

May 25. The annual pension bill was passed carrying an appropriation of \$279,000,000. The investigation of presidential campaign funds began.

June 5. The Soldier's Bonus bill failed of passage. The President failed to sign the measures repealing his extraordinary powers. The

second session of the 66th Congress ended.

Third (Short) Session. The Senate met on December 6, the opening of the short session of the 66th Congress.

December 7. The President's message, which was not delivered in person, was read. It covered the following main points: (1) Revision of the taxation laws; (2) the grant of independence to the Philippine Islands; (3) the grant of a loan to Armenia; (4) the need of economy in government expenditures; (5) the rehabilitation and training of disabled soldiers and sailors.

December 14. A resolution was passed reviving the War Finance Corporation and providing for the use of Federal Reserve facilities by farmers to aid in financing their crops.

December 16. The Poindexter anti-strike bill, which made it a felony to attempt to induce the employees of common carriers to quit work, was passed.

December 18. The measure providing for co-operation for the safeguarding of maternity between Federal and State authorities was passed, carrying an annual expenditure of \$1,480,000.

MEMBERSHIP OF 66th CONGRESS.

[Republicans in roman; Democrats in *italics*; Prohibitionists in SMALL CAPS; Republican and Progressive in roman with *; Independent in CAPS; Independent Republicans in *italic* CAPS.]

ALABAMA.—SENATORS: *Oscar W. Underwood, J. Thomas Heflin*. REPRESENTATIVES (Democrats, 9): Vacancy, 1: John McDuffie, S. Hubert Dent, jr., Henry B. Steagall, Fred L. Blackmon, William B. Oliver, Lilius B. Rainey, Edward B. Almon, George Huddleston, William B. Bankhead.

ARIZONA.—SENATORS: Henry F. Ashhurst, Marcus A. Smith. REPRESENTATIVE (Democrat, 1): At large, Carl Hayden.

ARKANSAS.—SENATORS: Joseph T. Robinson, William F. Kirby. REPRESENTATIVES (Democrats, 7): T. H. Caraway, William A. Oldfield, John N. Tillman, Otis Wingo, H. M. Jacaway, Samuel M. Taylor, William S. Goodwin.

CALIFORNIA.—SENATORS: James D. Phalen, Hiram W. Johnson. REPRESENTATIVES (Republicans, 6; Democrats, 4; Prohibitionist, 1): Clarence F. Lea, John E. Raker, Charles F. Curry, Julius Kahn, John I. Nolan, John A. Elston, Henry E. Barbour, Hugh S. Herman, Charles H. Randall, Henry Z. Osborne, William Kettner.

COLORADO.—SENATORS: Charles S. Thomas, Lawrence C. Phipps. REPRESENTATIVES (Republicans, 3; Democrat, 1): William N. Vaile, Charles B. Timberlake, Guy U. Hardy, Edward T. Taylor.

CONNECTICUT.—SENATORS: Frank B. Brandegee, George P. McLean. REPRESENTATIVES (Republicans, 4; Democrat, 1): Augustine Lonergan, Richard P. Freeman, John Q. Tilson, Schuyler Merritt, James P. Glynn.

DELAWARE.—SENATORS: Josiah O. Wolcott, L. Heisler Ball. REPRESENTATIVE (Republican, 1): At large, Caleb R. Layton.

FLORIDA.—SENATORS: Duncan U. Fletcher, Park Trammell. REPRESENTATIVES (Democrats, 4): Herbert J. Drane, Frank Clark, John H. Smithwick, William J. Sears.

GEORGIA.—SENATORS: Hoke Smith, William J. Harris. REPRESENTATIVES (Democrats, 12): James W. Overstreet, Frank Park, Charles R. Crisp, William C. Wright, William D. Upshaw, James W. Wise, Gordon Lee, Charles H. Brand, Thomas M. Bell, Carl Vinson, William C. Lankford, William W. Larsen.

IDAHO.—SENATORS: William E. Borah, John F. Nugent. REPRESENTATIVES (Republicans, 2): Burton L. French, Addison T. Smith.

ILLINOIS.—SENATORS: Lawrence Y. Sherman, Medill McCormick. REPRESENTATIVES (Republicans, 22; Democrats, 5): At large, William E. Mason, Richard Yates, Martin B. Madden, James R. Mann, William W. Wilson, John W. Rainey, Adolph J. Sabath, James McAndrews, Nickl Juul, Thomas Gallagher, Fred A. Britton, Carl R. Chindblom, Ira C. Copely, Charles E. Fuller, John C. McKenzie, William J. Graham, Edward J. King, Clifford Ireland, Frank L. Smith, Joseph G. Cannon, William B. McKinley, Henry T. Rainey, Loren E. Wheeler, William A. Rodenberg, Edwin B. Brooks, Thomas S. Williams, Edward E. Denton.

INDIANA.—SENATORS: James E. Watson, Harry S.

New. REPRESENTATIVES (Republicans, 18): Oscar B. Lühring, Oscar E. Bland, James W. Dunbar, John S. Benham, Everett Sanders, Richard N. Elliott, Merrill Moores, Albert H. Vestal, Fred S. Purnell, William R. Wood, Milton Kraus, Louis W. Fairfield, Andrew J. Hickey.

IOWA.—SENATORS: Albert B. Cummins, William S. Kenyon. REPRESENTATIVES (Republicans, 11): Charles A. Kennedy, Harry E. Hull, Burton E. Sweet, Gilbert N. Haugen, James W. Good, C. William Ramseyer, Cassius C. Dowell, Horace M. Towner, William R. Green, L. J. Dickinson, William D. Boies.

Kansas.—SENATORS: Charles Curtis, Arthur Capper. REPRESENTATIVES (Republicans, 7; Democrats, 1): Daniel R. Anthony, Jr., Edward C. Little, Philip P. Campbell, Homer Hoch, James G. Strong, Hays B. White, J. N. Tinscher, William A. Ayres.

KENTUCKY.—SENATORS: J. C. W. Beckham, A. Owsley Stanley. REPRESENTATIVES (Republicans, 4; Democrats, 7): Allen W. Barkley, David H. Kincheloe, Robert Y. Thomas, Jr., Ben Johnson, Charles F. Ogden, Arthur B. Rouse, James C. Cantrill, King Swope, William J. Fields, John W. Langely, John M. Robison.

LOUISIANA.—SENATORS: Joseph E. Ransdell, Edward J. Gay. REPRESENTATIVES (Democrats, 8): James O'Connor, H. Garland Dupré, Whitnell P. Martin, John T. Watkins, Riley J. Wilson, Jared Y. Sanders, Ladislav Lazaro, James B. Ansell.

MAINE.—SENATORS: Bert M. Fernald, Frederick Hale. REPRESENTATIVES (Republicans, 4): Louis B. Goodall, Wallace H. White Jr., John A. Peters, Ira G. Hersey.

MARYLAND.—SENATORS: John Walter Smith, Joseph I. France. REPRESENTATIVES (Republicans, 3; Democrats, 3): William N. Andrews, Carville D. Benson, Charles P. Coady, J. Charles Linthicum, Sydney E. Mudd, Frederick N. Zihlman.

MASSACHUSETTS.—SENATORS: Henry Cabot Lodge, David I. Walsh. REPRESENTATIVES (Republicans, 12; Democrats, 4): Allen T. Treadway, Frederick H. Gillett, Calvin D. Paige, Samuel E. Winslow, John Jacob Rogers, Willford W. Lufkin, Michael F. Phelan, Frederick W. Daling, Alvan T. Fuller, Peter F. Tarrue, George Holden Tinkham, James A. Galtivan, Robert Luce, Richard Olney, William S. Greene, Joseph Walsh.

MICHIGAN.—SENATORS: Charles E. Townsend, Truman H. Newberry. REPRESENTATIVES (Republicans, 12; Democrat, 1): Frank E. Doremus, Earl C. Michener, J. M. C. Smith, Edward L. Hamilton, Carl E. Manes, Patrick H. Kelley, Louis C. Cramton, Joseph W. Fordney, James C. McLaughlin, Gilbert A. Currie, Frank D. Scott, W. Frank James, Clarence J. McLeod.

MINNESOTA.—SENATORS: Knute Nelson, Frank B. Kellogg. REPRESENTATIVES (Republicans, 8; Independent, 1; Independent Republican, 1): Sydnev Anderson, Franklin F. Ellsworth, Charles R. Davis, OSCAR E. KELLER, Walter H. Newton, Harold Knutson, Andrew J. Volstead, WILLIAM L. CARSS, Halvor Steenerson, Thomas D. Schall.

MISSISSIPPI.—SENATORS: John Sharp Williams, Pat Harrison. REPRESENTATIVES (Democrats, 8): Ezekiel S. Candler, Hubert D. Stephens, Benjamin G. Humphreys, Thomas U. Stason, William W. Venable, Paul B. Johnson, Percy E. Quin, James W. Collier.

MISSOURI.—SENATORS: James A. Reed, Selden P. Spencer. REPRESENTATIVES (Republicans, 5; Democrats, 11): Milton A. Romjue, William W. Rucker, Jacob L. Muligan, Charles F. Booher, William T. Bland, Clement C. Dickinson, Samuel C. Major, William L. Nelson, Champ Clark, Cleveland A. Newton, William L. Igoe, Leonidas C. Dyer, Marion E. Rhodes, Edw. D. Hays, Isaac V. McPherson, Thomas L. Rubey.

MONTANA.—SENATORS: Henry L. Myrra, Thomas J. Walsh. REPRESENTATIVES (Republican, 1; Democrat, 1): John M. Evans, Carl W. Riddick.

NEBRASKA.—SENATORS: Gilbert M. Hitchcock, George W. Norris. REPRESENTATIVES (Republicans, 6): C. Frank Reavis, Albert W. Jefferis, Robert E. Evans, Melvin O. McLaughlin, William E. Andrews, Moses P. Kinkaid.

NEVADA.—SENATORS: Key Pittman, Charles B. Henderson. REPRESENTATIVE (Democrat, 1): At large, Charles R. Evans.

NEW HAMPSHIRE.—SENATORS: George H. Moses, Henry W. Keyes. REPRESENTATIVES (Republicans, 2): Sherman F. Burroughs, Edward H. Watson.

NEW JERSEY.—SENATORS: Joseph S. Frelinghuysen, Walter E. Edge. REPRESENTATIVES (Republicans, 7; Democrats, 5): Francis F. Patterson, Jr., Isaac Bacharach, Thomas J. Scully, Elijah C. Hutchinson, Ernest R. Ackerman, John R. Ramsey, Amos H. Radcliffe, Cornelius A. McGinnon, Daniel F. Minahan, Frederick R. Lehlbach, John J. Egan, James A. Hamill.

NEW MEXICO.—SENATORS: Albert B. Fall, Andrew A. Jones. REPRESENTATIVE (Republican, 1): At large, Benigno C. Hernandez.

NEW YORK.—SENATORS: James W. Wadsworth, Jr., William M. Calder. REPRESENTATIVES (Republican,

24; Democrats, 19): Frederick C. Hicks, Chas. Pope Caldwell, John MacCrate, Thomas H. Cullen, John B. Johnston, Frederick W. Rowe, James P. Maher, William E. Cleary, David J. O'Connell, Lester D. Volk, Daniel J. Riordan, Henry M. Goldfogle, Christopher D. Sullivan, Nathan D. Perlman, Peter J. Dooling, Thomas F. Smith, Herbert C. Pell, Jr., John F. Carver, Joseph Rowan, Isaac Siegel, Jerome F. Donoran, Anthony J. Griffin, Richard F. McKiniry, James V. Ganly, James W. Husted, Hamilton Fish, Jr., Charles B. Ward, Rollin B. Sanford, James S. Parker, Frank Crowther, Bertrand H. Snell, Luther W. Mott, Homer P. Snyder, William H. Hill, Walter W. Magee, Norman J. Gould, Alanson B. Houghton, Thomas B. Dunn, Archie D. Sanders, S. Wallace Dempsey, Clarence MacGregor, James M. Mead, Daniel A. Reed.

NORTH CAROLINA.—SENATORS: Furnifold M. Simmons, Lee S. Overman. REPRESENTATIVES (Democrats, 10): John H. Small, Claude Kitchen, Samuel M. Brinson, Edward W. Pou, Charles M. Stridman, Hannibal L. Godwin, Leonidas D. Robinson, Robert L. Doughton, Clyde R. Hoy, Zebulon Weaver.

NORTH DAKOTA.—SENATORS: Porter J. McCumber, Asle J. Gronna. REPRESENTATIVES (Republicans, 3): John M. Baer, George M. Young, James H. Sinclair.

OHIO.—SENATORS: Atlee Pomerene, Warren G. Harding. REPRESENTATIVES (Republicans, 14; Democrats, 8): Nicholas Longworth, A. E. B. Stephens, Warren Gard, Benjamin F. Welts, Charles J. Thompson, Charles C. Kearns, Simon D. Fess, R. Clint Cole, Isaac K. Sherwood, Israel M. Foster, Edwin D. Ricketta, Clement Brumbaugh, James T. Begg, Martin L. Davey, C. Ellis Moore, Roscoe C. McCulloch, William A. Ashbrook, Frank Murphy, John G. Cooper, Charles A. Mooney, John J. Babka, Henry I. Emerson.

OKLAHOMA.—SENATORS: Thomas P. Gore, Robert L. Owen. REPRESENTATIVES (Republicans, 2; Democrats, 6): Everette B. Howard, William W. Hastings, Charles D. Carter, Tom D. McKown, John W. Harrell, Scott Ferris, James V. McClintic, Charles Swindall.

OREGON.—SENATORS: George E. Chamberlain, Charles L. McNary. REPRESENTATIVES (Republicans, 3): Willis C. Hawley, Nicholas J. Sinnott, Clifton N. McArthur.

PENNSYLVANIA.—SENATORS: Boies Penrose, Philander C. Knox. REPRESENTATIVES (Republicans, 27; Democrats, 7; Independent Republican, 1; Vacancy, 1): At large, William J. Burke, Thomas S. Crago, Anderson H. Walters, William S. Vare, George S. Graham, Harry C. Ransley, George W. Edmunds, Peter F. Costello, George P. Darrow, Thomas S. Butler, Henry W. Watson, W. W. Grist, Patrick McLane, John J. Casey, John Reber, Arthur G. Dewalt, Louis T. McFadden, Edgar R. Kiess, John V. Leisher, Benjamin A. Focht, Aaron S. Kreider, John M. Rose, Edward S. Brooks, Egan J. Jones, John H. Wilson, Samuel A. Kendall, Henry W. Temple, Milton W. Shreve, Henry J. Steele, Nathan L. Strong, Willis J. Hulines, Stephen G. Porter, M. CLYDE KELLY, John M. Morin, Guy E. Campbell.

RHODE ISLAND.—SENATORS: LeBaron B. Colt, Peter G. Gerry. REPRESENTATIVES (Republicans, 3): Clark Burdick, Walter R. Stines, Ambrose Kennedy.

SOUTH CAROLINA.—SENATORS: Ellison D. Smith, Nathaniel B. Dial. REPRESENTATIVES (Democrats, 7): Richard S. Whalen, James F. Burnes, Fred H. Dominick, Samuel J. Nicholls, William F. Stevenson, Philip H. Stoll, Edward O. Mann.

SOUTH DAKOTA.—SENATORS: Thomas Sterling, Edwin S. Johnson. REPRESENTATIVES (Republicans, 2; Democrat, 1): Charles A. Christopherson, Royal C. Johnson, Harry L. Gandy.

TENNESSEE.—SENATORS: John K. Shields, Kenneth McKellar. REPRESENTATIVES (Republicans, 2; Democrats, 8): Sam R. Sells, J. Will Taylor, John A. Moon, Cordell Hull, Ervin L. Davis, Joseph W. Byrne, Lemuel P. Padgett, Thetus W. Sims, Finis J. Garrett, Hubert F. Fisher.

TEXAS.—SENATORS: Charles A. Culberson, Morris Sheppard. REPRESENTATIVES (Democrats, 18): Eugene Black, John C. Box, James Young, Sam Rainsbury, Halton W. Sumners, Rufus Hardy, Clay Stone Briggs, Joe H. Eagle, Joseph J. Mansfield, James P. Buchanan, Tom Connally, Fritz G. Latham, Lucian W. Parrish, Carlos Bee, John N. Garner, C. B. Hudspeth, Thomas L. Blanton, Marvin Jones.

UTAH.—SENATORS: Reed Smoot, William H. King. REPRESENTATIVES (Democrats, 2): Milton H. Wellins, James H. Mays.

VERMONT.—SENATORS: William P. Dillingham, Carroll S. Page. REPRESENTATIVES (Republicans, 2): Frank L. Greene, Porter H. Dale.

VIRGINIA.—SENATORS: Claude A. Swanson, Carter Glass. REPRESENTATIVES (Republican, 1; Democrats, 9): Schuyler Otis Bland, Edward E. Holland, Andrew J. Montague, Patrick H. Drewry, Rorer A. James, James P. Woods, Thomas W. Harrison, R. Walton Moore, C. Bascom Slemp, Henry D. Flood.

WASHINGTON.—SENATORS: Wesley L. Jones, Miles Poindexter. REPRESENTATIVES (Republicans, 5): John F. Miller, Lindley H. Hadley, Albert Johnson, John W. Sumners, J. Stanley Webster.

WEST VIRGINIA.—SENATORS: Howard Sutherland, Davis Elkins. REPRESENTATIVES (Republicans, 5; Democrat, 1): M. M. Neely, George M. Bowers, Stuart F. Reed, Harry C. Woodyard, Wells Goodykoontz, Leonard S. Echols.

WISCONSIN.—SENATORS: Robert M. La Follette, Irvine L. Lenroot. REPRESENTATIVES (Republicans, 10; Vacancy, 1): Clifford E. Randall, Edward Voigt, James G. Monahan, John C. Kleczka, Florian Lampert, John J. Esch, Edward E. Browne, David G. Classon, James A. Frear, Adolphus P. Nelson.

WYOMING.—SENATORS: Francis E. Warren, John B. Kendrick. REPRESENTATIVE (Republican, 1): At large, Frank W. Mondell.

ALASKA.—George B. Grigsby.

HAWAII.—J. Kuhio Kalaniana'ole.

PHILIPPINES.—Jaime C. De Veyra, Isauro Gabaldon.

PORTO RICO.—Felix Cordova Davila.

CLASSIFICATION

SENATE		HOUSE	
Republicans.	48	Republicans.	238
Democrats.	47	Democrats.	190
Republican and Pro-		Independent.	1
gressive.	1	Indep'd't Republicans	2
		Prohibitionist.	1
Total.	96	Vacancies.	3
		Total.	435

CABINET CHANGES. Upon the election of Carter Glass as Senator from Virginia, David Franklin Houston succeeded as Secretary of the Treasury and Edwin James Meredith (q.v.) became Secretary of Agriculture in place of Mr. Houston.

On February 13, Robert Lansing, Secretary of State retired as a result of a lack of harmony between his views and those of the President. During the earlier months of the President's long illness several Cabinet meetings were called under Mr. Lansing's nominal direction. Addressing Mr. Lansing, the President several times criticized him for the calling of these meetings, blaming him in a manner that practically called for his withdrawal. Finally the President in a letter (February 11) asked Mr. Lansing to retire and give the President an opportunity to select some one whose mind "would more willingly go along with" the President's. The difference between them appeared to have been of long standing, and to have developed during the Peace Conference. In general it appeared to arise from opposing theories as to the duties of the office. In the large and difficult field of foreign relations Mr. Lansing evidently believed that it was his duty not to act merely as the agent of the President, but to suggest and develop policies on his own initiative; whereas it seemed to be the President's view that the Secretary of State should merely execute the President's policy.

On February 25, Bainbridge Colby, a lawyer of New York was nominated by the President to succeed Mr. Lansing. The nomination was opposed by a considerable element in the Senate but eventually accepted. The main objections to Mr. Colby had to do with his changes in political allegiance. He was independent in tendency from the beginning of his career and in 1912 he had left the main body of his party to support Mr. Roosevelt. In 1916, although Mr. Roosevelt endorsed the candidacy of Charles E. Hughes on the Republican ticket Mr. Colby left the party altogether and came out for Mr. Wilson. From that time he firmly supported the Wilson policies. He was appointed a member of the Shipping Board during the war and in that capacity opposed control by British interests of the for-

mer international mercantile marine which had been transferred to American registry. He was afterwards in Paris at the sessions of the Peace Conference and he was from the first a strong advocate of the League of Nations. See COLBY, BAINBRIDGE.

An important change took place in the Department of the Interior with the resignation of the Secretary Franklin K. Lane whose ability had been rated very high throughout the country. In his letter to the President, February 28, his last day of office, he criticized sharply government methods as he had observed them during his seven years as member of the cabinet. The work of the various departments, he said, was badly organized; every one was afraid of every one else; responsibility was evaded and the creative sense blunted. He advised as a partial remedy the selection of fewer men at the head and men of greater capacity.

On April 24, it was announced that Walker D. Hines, Director-General of Railroads, had resigned, his resignation to go into effect May 15. He had served in the Railroad Administration from the time of its creation in December, 1917, when the government assumed control, and he became Director-General, upon the retirement of Secretary McAdoo, Jan. 11, 1919.

ARMY. On March 25 the House of Representatives requested information of the Executive in regard to the United States troops on the Rhine. To this the President replied, April 1, saying that these troops were under his own direction and not under that of Field Marshal Foch; that most of them were at Coblenz; and that they numbered, March 28, 726 officers and 16,756 enlisted men, serving in Germany, not only under the terms of the original armistice, but under the later agreements which had prolonged the armistice.

The subject of army camps, much discussed in 1919, continued to be prominent during the year. On April 12, two conflicting reports in regard to the construction of the 32 army camps and cantonments as a result of the investigation were submitted to the House by the War Expenditures Committee. The majority report which had Republican backing criticised the government officials in charge of the war building programme while the minority report of the Democrats defended the administration. According to the critics of the administration the government lost \$78,531,521 on the sixteen National Army cantonments as a result of waste, inefficiency and graft. The minority report declared that the construction work was equivalent to building 32 cities with a population of 37,000 to 46,000, but nevertheless it was completed in three months. They characterized it as one of the great achievements of the war. It was learned that the sale of American army stocks in France had realized on January 4 about \$800,000,000 and the total value was estimated at \$1,700,000,000.

The subject of army organization was under discussion during the year and the bill to that end was approved June 4. The Army Reorganization bill was agreed upon by the House and Senate May 27. For description in detail see the article MILITARY PROGRESS. On June 7, Major-General John J. Pershing, requested the Secretary of War to be placed on the retired list subject to military duty in case of emergency.

In November it was learned that the army was still 70,000 short of its authorized strength,

the figures according to the War Department statement being as follows: Total, 213,067; Continental United States, 162,918; army of occupation on the Rhine, 14,306; Philippines, 18,947; Hawaii, 6927; Panama, 5600; Porto Rico, 1493; China, 1406; Alaska, 867. There were a few troops in France and England. The strength of the National Guard on November 1 was 67,552 as compared with its authorized strength, 182,830.

Among the measures taken on behalf of ex-service men, had been the establishment of a Federal board for vocational education. In answer to certain criticisms to the effect that the board had worked inefficiently, the House committee on education investigated its operation. It recommended that the board should be made a bureau under the Treasury department, or a bureau under the department of the Interior. It had been charged against the board that although after nineteen months of operation, it had registered over 200,000 cases, it had placed only 2400 men in training and had succeeded in training and in placing in employment only 217.

Soldiers' Bonus. The House on May 29th by a vote of 289 to 92 passed the bill to provide bonuses for ex-soldiers. In order to do this they suspended the rules and passed it after a debate of forty minutes. In the majority there were 112 Democratic votes and in the minority 40 Republican votes. The bill involved an expenditure of over \$1,600,000,000. At the close of the second session of Congress it failed of passage.

SIMS-DANIELS CONTROVERSY. As noted under *Congress* above, a controversy began January 17 as result of the criticism by Admiral Sims of Secretary Daniels' award of naval honors which widened into a criticism of the conduct of the navy during the war. Admiral Sims maintained that the inefficiency of the Navy Department at Washington prolonged the war so that his recommendations as the commander of the fleet had not been followed, and that the morale of the navy had been destroyed by flagrant injustices of conferring decorations, etc. Emphatic denials on the part of the Secretary of the Navy supported by other officials succeeded and the controversy was the subject of prolonged press comment.

LAW EXCLUDING ALIEN AGITATORS. Although certain elements in the Republican party disapproved of further legislative action against sedition and although a sub-committee of the Republican National Committee with former Senator Albert J. Beveridge as chairman reported in May against enacting further laws against sedition, the administration continued in its repressive policy. The House bill amending the law dealing with alien agitators was modified by the Senate Immigration Committee in the direction of wider government powers for deportation and exclusion. This bill which passed on June 5 and was signed by the President on the same day embodied the Sterling and Johnson proposals. It provided for the exclusion from the United States or deportation of alien anarchists and all who "advise, advocate, or teach, or who are members of organizations that advise, advocate or teach: (1) the overthrow by force or violence of the Government of the United States or of all forms of law, or (2) the duty, necessity or propriety of the unlawful assaulting or killing of any officer . . . of the Government of the United States . . . , or (3) the un-

lawful damage, injury or destruction of property, or (4) sabotage"; or those who write or circulate or who are members of or affiliated with organizations that write or circulate any written or printed matter advocating any of these things. Representative Johnson, Chairman of the House Immigration Committee and sponsor of the bill in the House declared the meaning of the act to be that these foreign revolutionists should not preach their doctrines or circulate their literature or contribute their money to these objects and that the measure was aimed specifically at aliens in such revolutionary organizations as the I. W. W., the Communist, and Communist Labor parties.

DEPORTATION OF AGITATORS. On January 2 there were simultaneous raids by agents of the Department of Justice on the alleged Radicals in thirty cities resulting in the arrest of some 2700 persons of whom about three-fourths were Russians. Steps were taken toward deporting convicted Radicals more rapidly despite the complaints of many prominent men on the ground that the policy of the administration in this respect was contrary to American traditions. On January 12, the attorney of the eastern district of Pennsylvania resigned, at the same time publishing a statement condemning the methods of the Attorney-General. In his reply the latter cited the official manifesto of the Communist party as proof of its designs to overthrow the government by force and of its alliance with the Moscow International. It will be remembered that at the end of December 1919, a vessel named the *Buford* and nicknamed in the newspapers the "Soviet Ark" sailed from New York to Finland carrying 249 so-called Reds; also that several thousand arrests on the ground of revolutionary activities had been made in the course of the year 1919. The department was criticized for the deportation or detention of many prisoners on insufficient evidence. To this the Attorney-General replied that after careful investigation he had failed to discover any instance where justice had not been done to an alien and he said that a hearing had been given in every case and that the accused had had every opportunity to justify himself. On January 21, Mr. W. B. Lloyd, a wealthy radical and 37 others were indicted in Chicago on the ground of anarchistic conspiracy. On the list of those accused was the name of Mr. John Reed (q.v.), well-known newspaper writer, but he had escaped to Copenhagen on his way to Finland. On January 23, the grand jury of the Crime Court of Illinois indicted 85 leaders of the Communist party, including Mrs. Rose Pastor Stokes who had already been sentenced, June 1, 1919, under the Espionage act, but the verdict against her had been reversed on the ground that the presiding judge had been biased and had unduly influenced the jury. Her arrest in 1920 followed her testimony on behalf of a fellow Communist, Mr. Benjamin Getlow, who had been tried in New York on a similar charge and whose case attracted much attention. He was a clothing cutter by trade and the manager of a radical paper called the *Revolutionary Age*. He had been an active member of the Socialist party and on that ticket was elected some years before to the New York Assembly. He was charged with associating openly in 1918 and 1919 with a group of anarchists who spread the view that the United States government had treated its workmen with injustice and that there

was no hope of bettering their condition by constitutional means. He was arrested as the result of the work of the Lusk committee; convicted of conspiring to publish in his magazine the manifesto of the Communist party, the general charge being that of criminal anarchy, and received the maximum sentence of imprisonment, February 11. Many other sentences were imposed on radicals in other parts of the country. In Cincinnati, for example, thirteen Socialists were sentenced to terms ranging from three to fifteen months on the charge of conspiring to defeat the military draft; seven of the Industrial Workers of the World were sentenced for murder in the second degree in Washington on March 13.

Nevertheless, the activities of the authorities in suppressing alleged revolutionary movements slackened somewhat in the spring. This was due in part to the decision of the Secretary of Labor, Mr. Wilson, that membership in the Communist Labor party was not a deportable offense, and to the course taken by Mr. Louis F. Post, Assistant Secretary, in cancelling deportation orders and reducing the amount of bail from \$10,000 to \$1,000. Secretary Wilson's decision was given out May 5, in time to prevent new raids throughout the country on the Communist Labor party. The decision was attacked by Mr. F. P. Garvin, Assistant Attorney-General, who said that radicals, however dangerous, would now be able to join the Communist Labor group without renouncing any of their principles. It was defended by Secretary Wilson on the ground that though the Communist Labor party advocated a revolution it called for the use of parliamentary methods. While the administration was condemned in labor and progressive circles for going too far in this matter, it was condemned in the opposite camp for not going far enough. In March, Senator King of Utah offered a resolution for the investigation of the administration and the enforcement of the immigration laws and for inquiring specifically into the administration of Mr. Frederic C. Howe, former Immigration Commissioner of New York. Mr. King presented a list of 80 aliens whose deportation had been justified, but who had been retained by the Labor Department. Finally a general inquiry into the deportation policy of the administration was favored with special reference to the course taken by the Assistant-Secretary Post, who had released certain aliens whose deportation had been ordered. On April 15, a resolution was offered in the House for investigation of the charges against Mr. Post and his impeachment was demanded. Hearings on the subject began on April 27. It was charged that many hundreds of aliens taken under the law had been released and that this had been done in many cases without investigation and over the head of the Commissioner of Immigration. On the other hand, it was said that Mr. Post had merely exercised humanity while the "justice officers used worse than Russian methods." The chairman, Mr. Johnson, testified that Mr. Post's action had greatly hampered the work of the Department of Justice and had brought about a state of confusion which would benefit only the Red agitators. Attacks were made on Mr. Post and Secretary Wilson, at a meeting of the Senate Immigration Committee May 6. Mr. Post on his own behalf testified May 7-8 to the effect that the evidence presented against him was insufficient. At the same time he offered statistics

indicating that aside from the aliens deported on the *Buford*, only 22 had been deported since November 1, 1919; that from November 1, 1919, to April 24, 1920, about 6350 warrants had been issued and that about 5000 persons had been arrested of whom 3000 had been released almost immediately; that he had cancelled deportation orders for 61 Russian workers and 1322 members of the Communist and Communist Labor parties; that deportation warrants had been issued for 307 Russian workers and 455 Communists of whom about 263 had been deported, while the deportation of others had been delayed because the ports of destination were inaccessible. He said that of all the prisoners arrested by the Department of Justice he had found that only 40 or 50 actually favored violence against the United States, and he declared that his reduction of bail to \$1000 was in accordance with the constitutional prohibition of excessive bail and was sufficient to assure the appearance of the accused. Attorney-General Palmer replied on June 1 to Mr. Post's criticism of the Department. He said that the latter had exceeded his power; that he practically encouraged Red activities; that believing the deportation law to be wrong he had deliberately disregarded it, releasing dangerous radicals. Mr. Palmer named a number of cities in which the departmental raids had revealed preparations to make use of bombs and guns. He denounced as a falsehood the charge that the Department of Justice had agents in its service for the purpose of forming Communist organizations which could be raided.

May Day passed without disturbance despite the expectation on the part of the Department of Justice of an anarchist outbreak. The Attorney-General declared that a far-reaching plot had been formed but had failed on account of the energetic measures taken by the Federal authorities and that he had seized tons of inflammatory writings urging May Day outbreaks for the purpose of forcing peace with Soviet Russia or as a protest against the arrest of radicals, or in pursuit of the class war; and he said a black list had been found on which many prominent officials had been marked for death. He also declared that hundreds of suspects had been arrested, that every public building had been guarded by Federal agents and police and the homes of threatened officials adequately protected.

Attacks on the administrative policy of repression, especially on the course of Attorney-General Palmer, continued throughout the year from a variety of sources. The National Popular Government League, May 27, denounced the illegal practices of the United States Department of Justice. It was signed by twelve prominent jurists including deans and professors of Harvard, Chicago, and many other university law faculties. Many affidavits were produced in proof of acts of cruelty and theft on the part of agents and the treatment of radicals was denounced as brutal in many specified instances. For example, in the hotel and coal strikes in Hartford, Buffalo, Detroit and New York City and in the raid on the Russian People's House in New York City in November 1919, it declared that American institutions had not been protected by this course but on the contrary had been seriously undermined and it concluded that no organization or radicals acting through propaganda during preceding six months could have created so much revolutionary sentiment as had been created by

the Department of Justice itself. The opponents of the Department of Justice warmly commended the course of Assistant-Secretary Post. They furthermore charged the Department of Justice with inciting criminal agitation by agents who joined various suspected associations, and with wholesale arrests, imprisonment without warrant, illegal search, criminal thefts of money and personal property by agents of the Department, cruel and unusual punishments, use of government funds contrary to law for propaganda in the press, brutal and indecent treatment of women prisoners, etc. The American Women's Committee, May 31, charged the agents of the Department with cruelty and decided to appeal to Washington for an investigation. On the other hand the Department of Justice was defended by a large part of the press, and in other quarters there was complete indifference to the whole subject. Moreover the Attorney-General responsible for the policy of the Department had a large popular following as presidential candidate and both he and his supporters argued that all measures that had been taken were thoroughly in the spirit of American patriotism and were absolutely necessary for the safety of the state.

RETURN OF THE RAILROADS. In accordance with the President's proclamation, the government control of railroads which had been enforced after Dec. 28, 1917, came to an end and the railroads were returned to their owners, March 1, 1920. Meanwhile, the Esch-Cummins law had been signed by the President, February 28, and the operations of the railroads under private control were begun in accordance with its provisions. The majority of the employees were retained. In many instances the officials who had operated the roads before the war returned to the management. For further information in respect to the Esch-Cummins law, the cost under government operation, and the various features of railway operation during the year, see the article **RAILWAYS**. The great railway strike of 1919 and its consequences down to the close of that year are described in the preceding **YEAR BOOK**. Early in 1920 the railway brotherhoods again demanded wage increases and in March a bi-partisan board discussed the points at issue, but came to an end in April without reaching an agreement, and the question was now submitted to the Labor Board which was organized under the Esch-Cummins bill. A railway strike began on the Chicago and Milwaukee Railway, April 2. The brotherhood declared it an illegal strike having no relation to the wage question and aiming only to promote the "One Big Union" idea.

FUEL CONTROL. The functions of the Fuel Administrator were divided by executive order, February 28, between the Director-General of Railroads and a commission of four. Government control of the prices of bituminous coal was terminated April 1.

INDUSTRIAL CONFERENCE. As noted in the preceding **YEAR BOOK**, after the Industrial Conference came to an end, a second Industrial Conference was called by the President and assembled December 1. Its final report was issued March 6, 1920. See the article, **LABOR ARBITRATION**.

COAL STRIKE COMMISSIONS. The Coal Strike Commission appointed December 22, 1919, to arrange the difficulties between operators and miners, reported, March 11, in favor of a general wage increase of 27 per cent without change in

conditions. At a joint conference of miners and operators, March 29, it was agreed that the Commission's decision should go into effect April 1. Meanwhile, the Wage Scale Committee comprising representatives of the anthracite parties to the dispute had been constituted and in June this committee proposed the appointment by the President of a commission similar to that for bituminous coal. This was done, and the new commission after investigating the question reported in August in favor of a 17 per cent advance in wages. The question of wage increases beyond this point was under discussion in December.

TARIFF EMERGENCY BILL. On December 22, an emergency bill proposed by Mr. Fordney for the purpose of aiding the farming interests by a high protective tariff on agricultural imports was passed in the House by a vote of 196 to 86, forty-one Democrats being in favor of the bill and fourteen Republicans against it. It gave the highest protection to wool, proposing duties ranging from 15 cents a pound on unwashed to 45 cents a pound on washed wool. Other duties proposed were: Cattle, 30 per cent; sheep, \$2 a head; peanuts, 3 cents a pound; beans, 2 cents a pound; rice, 2 cents a pound; vegetable oils, 20 to 26 cents a gallon; wheat, 30 cents a bushel; corn, 15 cents a bushel. It was before the Senate Finance Committee at the close of the year.

IMMIGRATION BILL. The Johnson Immigration Bill for the virtual exclusion of aliens was passed by the House by vote of 293 to 41, December 13, with amendments reducing the period of exclusion to one year instead of two, and allowing brothers and sisters of aliens residing in the United States to enter the country. The bill was then sent to the Senate. The chief arguments advanced on its behalf in the course of the debate were that at the existing rate of immigration 800,000 would enter the country in a year; that the unemployed already numbered 2,000,000 with a prospect of increase; that the housing situation would be rendered more acute by this influx of aliens; that the immigrants belonged to classes that would remain in cities and aggravate the problems of congestion; that many of them were tainted with radical views; that there was danger of their introducing typhus and other epidemic diseases. The facts and figures on which these arguments rested were attacked by the opponents of the measure who also objected to certain technical features of it. Much evidence was gathered at the close of the year indicating the prospect of a greater influx of aliens than ever before and many plans for restricting immigration were under discussion and favored in quarters opposed to the Johnson measure as too extreme.

THE CASE OF SENATOR NEWBERRY. The long proceedings in the case of Senator Truman H. Newberry, and others charged with conspiracy to violate the Federal law limiting campaign expenses resulted March 20 in a verdict of guilty. Appeal was taken to the United States Supreme Court and the case was pending at the close of the year. For details see **MICHIGAN**.

PHILIPPINE INDEPENDENCE. During 1920 the Philippine Commission of Independence with headquarters at Washington carried on a campaign for the self-government of the Islands. It sent an appeal to the Republican Convention at Chicago for the adoption of a plank declaring in favor of immediate independence, citing the

promise of the United States in the preamble of the Jones law of August 29, 1916, to recognize Philippine independence as soon as a stable government was established. This appeal complained that frequent attempts to secure the fulfillment of this promise had failed and that the Republican Convention had called no Filipino delegates. It said that the American government had entered into a binding engagement and that it was the duty of the great political parties to see that the promise was kept. In his message of December 7, President Wilson said on this subject:

"Allow me to call your attention to the fact that the people of the Philippine Islands have succeeded in maintaining a stable government since the last action of the Congress in their behalf, and have thus fulfilled the condition set by the Congress as precedent to a consideration of granting independence to the Islands. I respectfully submit that this condition precedent having been fulfilled, it is now our liberty and our duty to keep our promise to the people of those islands by granting them the independence which they so honorably covet."

RELATIONS WITH HAITI. For more than a year there were rumors of American misgovernment in Haiti, including charges of atrocities on the part of American troops. As a rule the general policy of the United States was not condemned, but it was said that individual acts of oppression were frequent owing to the bad choice of the American officials. A charge commonly made was that many appointments were simply the result of party considerations without regard to the merits of the appointees. Later, in the middle of 1920, magazine articles began to appear referring to instances of irregular warfare in Haiti and to the severity of Americans in putting down the so-called *cacos*, a class of bandits and revolutionists that hid in the mountains and made occasional forays. These were followed by articles specifically charging American troops with acts of brutality including a resort to the same kind of torture formerly said to have been employed in the Philippines, such as the "water cure." It was said that about 3000 natives had been killed during the occupation by the Americans; also that some of the revolts had been occasioned by the course of the Americans in enforcing the *corvée* or compulsory road service. The American government took notice of these charges in October, as the result of a letter addressed, Oct. 2, 1919, by Brigadier-General George Barnett, former major-general in command of the Marine Corps, to Colonel Russell who was then in command of the Marines in Haiti. This letter was not brought to the attention of the officials at Washington till the autumn of 1920. In it General Barnett had said that the court-martial of a private in the Marines for the killing of a native had brought out a statement by his counsel showing that practically indiscriminate killing of the natives had been going on for some time. He said that 3250 natives had been killed by American troops, but subsequently changed the figure to 2250. The Secretary of the Navy, Daniels, in a public address in October declared that he had not heard of these conditions and that they would be immediately investigated. A court of inquiry was convened toward the end of the month with Admiral Henry T. Mayo as presiding officer and on October 27, General Barnett was called as the first witness.

He said that the evidence on which he based

his letter was brought to his attention when he reviewed the records of the military trials of two privates of the Marines on the charge of unlawful execution of the natives. He explained that by indiscriminate killing he did not mean that the killings were to be laid at the door of the Marines as a whole, but only of individuals, and that he had no evidence other than what was afforded by those two military trials, but desired the commandant in Haiti to look into the conditions implied by the counsel of one of the prisoners. Major E. M. McClellan who aided General Barnett in preparing the report on Haiti was next called. He submitted a list of killings from the beginning of the American occupation in 1915 to June 30, 1920. The total was 2250 and the greater number was reported for 1919, namely 1861. Major McClellan declared that the figures were compiled from official reports at Marine headquarters. The large number killed in 1919 was explained by the campaign carried on in that year for the purpose of clearing the island of the bandits. Major Thomas C. Turner, Adjutant of the First Brigade of Marines, testified on November 12 before the National Committee of Inquiry that after the American occupation there had been 17,000 bandits in the field at various intervals and that of these 7608 had surrendered. In the course of nearly 300 engagements after the campaign against the bandits began in October 1919, 1132 Haitians were killed. He testified that the troops had never molested the inhabitants. In subsequent testimony on behalf of the Marines the cruelty and destructiveness of the bandits were emphasized. According to one witness, as many as two thousand peaceful Haitians had been killed by them within a few years and during the summer of 1919 large farming regions had been completely devastated. Moreover it was charged that the bandits mutilated the marines and the gendarmes whom they captured. Instances of shocking brutality were cited.

After the publication of the charges against the Marines, the State Department sent Rear-Admiral H. S. Napp on a special mission to Haiti to investigate conditions in the bandit district. He reported that throughout that region there had been a great improvement, that women traversed the country freely without protection and that everywhere the people expressed gratitude for their security from the attacks of the *cacos* or bandits. As to the Marines, the prevailing disposition seemed to be to regard them as friends, but there was much distrust of the gendarmes who being natives and largely from the lower class were inclined to robbery.

While the investigation of alleged brutalities on the part of the Marines was going on, President Dartiguenave of Haiti appealed November 13 for a Congressional investigation of the American civil administration. He said the civil administration was more oppressive than the military, and attacked the methods of the minister, Mr. Blanchard and the financial counsel, Mr. John McIlhenny. The latter he said did not report to the Haitian government but required that government to submit to his will. As an instance of the latter's arbitrary courses he said that aided by the American minister he had confiscated salaries of the president, secretary of the state, and the members of the legislative council, on account of the Haitian government's refusal to insert in the contract of

the National Bank of Haiti, which was controlled by the National City Bank of New York, a clause prohibiting the importation into Haiti of foreign gold. After many other allegations in respect to misgovernment and failure to keep to the spirit of the treaty, he said that all the efforts of his government to collaborate with the American authorities were disdained and repulsed, and that the State Department closed its ears to protests. As to the American Marines had no way of proving homicide or violence and while he had heard of various regrettable acts, he believed the accusations had been exaggerated by public clamor. In general the people had rejoiced over the coming of the Americans. According to reports in the press, the administration attached no importance to the criticism by the Haitian president and sustained the acts of the American minister.

There was much sympathy in certain quarters with the position of President Dartiguenave who though showing readiness to forget the past declared that there had been serious abuse of power. His demand that there should be a Congressional investigation was favorably received by many American newspapers. He said that for a long time a system of terrorism had been applied but that it had ceased when the command of the gendarmes passed over to General Wise and Colonel Hooker in July, 1919. Without distinction of party, many American writers for the press deplored conditions in Haiti and especially the policy of concealment which had prevented the facts from being known for so long. The application of the system of *corvées* had been an especial grievance. It was a relic of the old French law requiring service in kind, but according to critics of the American administration it had served as a means of organizing forced labor in a form that practically amounted to slavery. Another grievance was the appointment in Haiti of Americans from the southern States whose prejudice was likely to lead them into courses needlessly offensive to the people. It was said that they showed a marked lack of tact and sometimes brutality in dealing with the cultivated element in the colored population. The American officials also were said to have treated the local government without due respect. Instances were cited in the press as evidences that the American government had been disposed to treat the Haitians like disorderly children. The criticism of the government was not directed against its intentions or against the American policy. Nor was it said that the military occupation had not been resulting beneficially to the people. The criticism dealt mainly with the lack of wisdom shown in the choice of officials, the lack of tact, the long continued policy of concealment and the apparent desire to escape responsibility at any cost. It was only after many months that the government took notice of the charges against it. A year before the subject became matter for official action, misrule in Haiti had been definitely charged in various quarters.

THE TREATY IN CONGRESS. The President had opposed any reservations of the Treaty and was against all amendments by the Senate, despite the fact that many of his own party believed that the amendments had not destroyed the substance of the League of Nations plan. In his Jackson Day letter of January 8, he declared strongly against textual changes and intimated

that the Treaty should be submitted to the people in the approaching election as "a great and solemn referendum." In the same month Viscount Grey who had come to Washington as temporary Ambassador to succeed the Earl of Reading issued a letter which was published in the London *Times* January 31. In this he held that the reservations were not unreasonable from the American point of view and were in no way injurious to Great Britain or the other members of the League. He accepted the principle of the Lodge amendment in respect to the representation of British dominions in the League. This letter appeared to be in conformity with the opinions of the French and English governments. There was some comment in the American press to the effect that Lord Grey had interfered improperly in American affairs but this aspect of the matter was not much insisted upon. Political lines divided opinion inside Congress but not to the same extent outside. Bi-partisan conferences were held in January but on January 31 Senator Lodge declared that they had failed. On February 9, the Senate voted, 63 to 9, to suspend the rules and permit reconsideration. The Treaty was referred to the Senate Foreign Relations Committee which reported it, February 16, and from that time it was almost continuously debated till March 19, when it failed of passage. The vote lacked the necessary two thirds majority by seven, the final vote, being 57 for ratification and 37 against (including pairs). The vote for ratification including pairs was, according to political parties, 34 Republicans and 33 Democrats; against ratification, 24 Democrats and 15 Republicans. On March 8, in a letter addressed to Senator Hitchcock the President reaffirmed his opposition to any change in Article X (see preceding YEAR BOOK, p. 766) saying that any reservation which deprived the League of Nations of the force of that article cut out the very heart of the Covenant, and that the article in question represented the renunciation by the great Powers of their imperialistic policies and marked the acceptance of a new doctrine in the world's affairs; that all the imperialistic influences in Europe had been hostile to it and that its defeat now would mark the complete triumph of their efforts to nullify the Treaty. In this letter he made the following remark which was widely discussed and gave great offense to the controlling party in France and its supporters in other countries. "Throughout the sessions of the Conference in Paris it was evident that a militaristic party under the most influential leadership was seeking to gain ascendancy in the counsels of France. They were defeated then, but are in control now." Another remark of his was significant as showing the uncompromising attitude that he maintained: "I hear of reservationists and mild reservationists but I cannot understand the difference between a nullifier and a mild nullifier. . . . I have been struck by the fact that practically every so-called reservation was in effect a rather sweeping nullification of the terms of the treaty itself." In spite of the President's attitude, the Senate adopted, March 15, by a vote of 56 to 26, a reservation in respect to Article X in a form even stronger than had previously been accepted. and in this vote 14 Democrats voted with the Republicans. The reservation in its final form was as follows:

"The United States assumes no obligations to employ its military or naval forces or any form of economic discrimination to preserve the territorial integrity or political independence of any other country, or to interfere in controversies between nations, whether a member of the league or not, under the provisions of Article X; or to employ the military or naval forces of the United States under any article of the treaty for any purpose unless in any particular case the Congress in the exercise of full liberty of action shall by act or joint resolution so declare."

A fifteenth reservation adopted the day before the final vote (March 18) was much discussed. This related to Ireland and declared the adherence of the United States to the resolution of sympathy with the aspirations of the Irish people for a government of their own choice, adopted by the Senate June 6, 1919, adding that when such government is attained, "a consummation, which, it is hoped, is at hand, it should promptly be admitted as a member of the League of Nations." This reservation was passed by a vote of 38 to 36, with 21 Democrats and 17 Republicans voting in the affirmative.

The day after the adverse vote of March 19, the rejected Treaty was sent back to the President. There had been a small group of Senators of whom Senator Borah was the leader, who were known as irreconcilable in their opposition to the Treaty and the League. They were, for the most part, Republicans. But the majority of the Senate under Senator Lodge's leadership favored the Treaty if its acceptance were accompanied by a resolution making certain qualifications and by the reservations. It was believed that enough Democrats would vote with the Republicans on this issue to give it the necessary two-thirds majority. When the above-mentioned votes were taken it was charged in certain quarters that Senator Lodge and the Borah group had combined in order to make the reservations still more objectionable to the administration and it was charged by others even that the administration forces had united with the Borah group for the purpose of defeating the Treaty altogether, rather than accept it with amendments. Among persons of moderate opinions there was much criticism of the administration for not accepting the Treaty with the comparatively slight reservations that would have been possible at the beginning of the discussion. As the discussion went on, the opposition grew stronger and the reservations were finally more serious than they would have been at first.

THE WAR STATUS. After the Treaty was rejected in the Senate efforts were made in the House to end the war by joint resolution. A motion to this effect was brought forward by the chairman of the Foreign Affairs Committee and it was passed by the House on April 9, by a vote of 242 to 150, with 22 Democrats voting in the affirmative, while only two Republicans voted against it. It went to the Senate where it was referred to the Foreign Affairs Committee of which Senator Lodge was chairman. On April 30, the committee, by a strict party vote, reported favorably as a substitute for the House resolution, a resolution that had been drafted by Senator Knox.

THE KNOX RESOLUTION. The Knox resolution proposed the repeal of the joint resolution of April 6, 1917, which declared the existence of a state of war with Germany and in place of it to declare that the state of war was at an end provided that the United States should retain possession of the property of the German

government and its subjects which was then in its hands until such time as a treaty was ratified containing suitable provisions in regard to claims growing out of the war or until the German government had granted to the citizens of the United States the most-favored-nation treatment and confirmed to the United States the fines, seizures, etc., made at the expense of Germany during the war. It was further provided that Germany was to forego any pecuniary claim based on injuries which had occurred before the treaty came into effect and that the United States did not waive any of the rights or privileges acquired by it or by its situation under the Armistice or under the Treaty of Versailles.

The subject of the Knox resolution was widely discussed during 1920 and the measure was criticized severely as going too far against the defeated enemy and as likely to involve damage suits. It was argued that if it established peace without Germany's acceptance of the conditions, the United States or its citizens would be liable under international law to suits on the part of Germany for the private property seized during the war. It was also criticized for the attempt to secure to the United States the benefits of the Treaty which the Senate had refused to ratify. Senator Knox in arguing on its behalf charged that President Wilson had maintained a state of war in order to force the Senate to accept a Treaty which had been almost universally discredited. He said that the Treaty itself provided for the act which would terminate the war and that it was evidently the intention at that time that the war would end. The debate that followed turned mainly on the question whether the legal status was that of peace or war. The President sent a telegram to the chairman of the Democratic Central Committee at Portland, Oregon, which was published on May 9. In this, he called upon the legislatures to support the treaty and condemn the Lodge reservations. He said the League of Nations was the hope of the world and that if it were not ratified, the chief motive which had brought America into the war would be defeated. On May 13 the Knox resolution was amended by eliminating the request to the President that he should negotiate a separate treaty with Germany. In its amended form, the Senate voted it on May 15 by 43 to 38. Among the affirmative votes were those of three Democrats: Senators Reed, Shields and Walsh, and among the negative votes, there was one Republican, Senator Nelson, while another, Senator McCumber was paired. On May 19, it was reported to the House which on May 21, the House of Representatives adopted it by a vote of 228 to 139; 19 Democrats voting in the affirmative. On May 27, the President vetoed the measure with a message to Congress to the following effect: He was unwilling to become a party to an action that would stain the honor of the United States. The resolution seemed to establish peace with Germany without exacting from the German government anything by way of setting right the numberless wrongs which it had done. The resolution said nothing about reduction of armaments, vindications of the rights of Belgium, release of the Christian populations of the Ottoman Empire or other important elements of pacification. The United States declared in effect it did not care to take any further risks or to assume any further responsibilities with regard to the freedom of na-

tions or the sacredness of international obligations or the safety of independent peoples. On May 28, a motion to pass the resolution over the President's veto was lost by a vote of 219 against 152, 17 Democrats voting with the majority, and 2 Republicans voting with the minority. Thus the deadlock continued in the summer of 1920.

On June 3, the House by a vote of 343 to 3 passed a resolution repealing all the war measures except the Lever Food and Fuel Control act and the Trading with the Enemy act and on the following day the resolution passed the Senate, but the President failed to attach his signature to it so it did not go into effect.

THE TREATY AS A CAMPAIGN ISSUE. In May, the President declared that the Democrats as a party should endorse and support the Treaty and condemn the Lodge reservations. Meanwhile the opinions of prominent men in both parties had become very diverse and the lines between the two parties were indistinct. Democratic sentiment seemed to be drifting away from the President's position to a willingness to accept reservations and Republican sentiment on the other hand seemed to be veering toward the more hostile attitude in respect to the League of Nations of Senators Johnson, Borah, and others. Many prominent Republicans like former President Taft, Mr. Elihu Root, Mr. Charles E. Hughes, and Mr. George W. Wickersham, had been committed to the Treaty and the League of Nations and while they favored mild reservations, they were much closer to the Democratic attitude than they were to the attitude of Borah and Johnson. Mr. Hoover had entered the Republican primaries in California against Senator Johnson, but when he was accused of being too European in his attitude, he declared that he had supported the Treaty only on the basis of the Lodge reservations. Before the meeting of the Republican convention in Chicago, there was much uncertainty in regard to this issue. The views of leaders like Mr. Root, Mr. Taft, and Mr. Hughes, were fairly close to those of Senator Lodge and the Senate majority during the long debate. These views were also supported by General Wood, Governor Lowden, Mr. Hoover, and others. On the other hand were prominent Republicans like Senators Knox, Borah, Johnson, and Poindexter who were irreconcilable opponents of the League. See below *Political Campaign*.

THE CAMPAIGN. The Republican speakers for the most part occupied themselves in criticizing the Democratic administration, but they pointed also to the record of the Republican party for constructive service since the Civil War. It was not difficult to convince hearers of its superiority for it had been in power the greater part of the time. For the same reason it could point also to the larger number of political veterans who had distinguished themselves in the public service. A common argument for the Republicans during the campaign was based on the greater average ability of Republican officials, and politicians. There were signs early in the year that the old division of the Republican party into Conservative and Roosevelt or Progressive elements had disappeared although some members of the latter were supporting Senator Hiram Johnson. There was an irreconcilable difference, however, among the persons who were talked of as candidates in regard to the views on the League of Nations. Senator Hiram Johnson,

for example, was opposed to any League at all resembling that which the President stood for. Mr. Hoover, whose allegiance was uncertain as between the two great political parties, but who subsequently declared himself a Republican, was a strong supporter of the League.

Among the Democrats, the majority appeared to be somewhat mildly in favor of the Treaty and the League. It was believed by some that the President's course would have the effect of ranging the supporters of the League on the Democratic side and putting the Republicans in a position of destroyers of the Treaty and enemies of the League, but this situation was not brought about. The Democratic party as a whole was not in favor of the strict devotion to the existing document that had marked the President's attitude. There were many in the Democratic party who believed that the President was too uncompromising in respect to modifications of the Covenant. It seemed certain, for example, that the New York Democratic delegation which would be the largest at the San Francisco Convention was less in sympathy with the President's views than were most of the Republican delegates. The democracy of New York City, under Tammany's control was more hostile to Mr. Wilson's ideas in respect to the League of Nations than were the Republican followers of Mr. Knox. In New York among the Democrats, the hostility to the League assumed an anti-British tinge and many Democratic politicians were supporting the Sein Finn Irish movement in a manner that was distinctly hostile to the British government. Mr. Bryan declared for the Lodge reservations and against the White House position. In short, during the first half of the year at least it was plain that the League of Nations issue divided both parties, and as time went on its opponents seemed to increase. This was in part due to a growing distrust of the modern European governments and a considerable resentment against what was supposed to be a lack of appreciation in Europe of America's efforts in the war. Mr. Wilson was applauded in liberal quarters when he insisted upon American responsibility as a guiding principle but this was not a monopoly of the President's, Mr. Root also recognized in full measure American responsibility in world affairs but he approved the Treaty with Senator Lodge's reservations. Senator Lodge himself granted the main principle of international coöperation and the main elements provided for it in the Treaty. After the reservations were passed by the Senate, moreover, it had been made plain by the British, French and Italian governments that they did not believe these amendments affected vitally the Treaty or prevented the development of the League of Nations. In the early part of the year the general principles of the reservations had been accepted by General Wood, Governor Lowden and Mr. Hoover, and among the other candidates Senator Harding and President Butler had made it plain that they would not advocate a policy that would involve the foregoing by America of her international obligations. As the day for the Convention approached, the situation was altogether uncertain. While the majority of the leaders appeared to be in general agreement with the Lodge position, others like Senators Knox, Hiram Johnson, Borah and Poindexter were irreconcilable. The public mind was evidently not centred upon the

Peace Treaty and there was no chance that the election would take the form of the "solemn referendum" demanded by President Wilson in the Jackson Day letter, quoted above. Many other matters were more generally discussed. The question of the enforcement of prohibition, for example, constantly engaged the public attention though it did not become a party issue.

PRESIDENTIAL CANDIDATES. Several of the "booms" for Presidential candidates had been going on in 1919 and within the early months of 1920 they were well under way. The strongest was that of General Wood, and next perhaps was that of Mr. Herbert Hoover. From the time his name was brought up in 1919 he was considered as a Democratic possibility or as likely to rally a Progressive or independent vote but he gave out in the spring that he would run only as a Republican candidate. Other Republican candidates prominently discussed at the beginning of the year were Senator Hiram Johnson of California and Governor Frank O. Lowden of Illinois; and among those frequently mentioned were Governor Calvin Coolidge of Massachusetts; Governor Allen of Kansas; Senator Warren G. Harding of Ohio; and Dr. Nicholas Murray Butler of New York. During the first half of the year, indications pointed to the success of General Wood's candidacy. He was certainly the most conspicuous figure among those put forward and his campaign made rapid progress. Early in the year his supporters were counting on 300 delegates pledged to him at the Convention at the start; and from New York, New Jersey, Delaware, and New England alone, 100 delegates were claimed. Mr. Frank H. Hitchcock who had managed the Taft and Hughes campaigns gave his adherence to the Wood movement which, however, was directed by Colonel Wm. Proctor of Ohio, who became national chairman and active director. The arguments for General Wood included the following points: He had won a wide reputation as an administrator and organizer in Cuba and the Philippines after the Spanish-American War; his record during the late war had won him especially the support of service men and he had also a large following among all who were impatient of the slowness of which this country had prepared for war. It was he who developed the Plattsburg idea and the system of military training and other agencies which helped to prepare the country for war. The Plattsburg association was one of the first to take steps on his behalf and the movement spread throughout the training camps associations. At its beginning it was largely voluntary and it included many young men who offered their services as clerks, stenographers, etc. in the campaign. By the close of March, the Leonard Wood League which had become a national organization had active branches in thirty-five States. It undertook a comprehensive campaign and issued a vast number of books, pamphlets, etc. telling of the candidate's achievements. The leading argument on his behalf was that he was a strong man who would deal resolutely with the difficulties of reconstruction. His Americanism was much emphasized and his soundness in respect to all extreme ideas. By the middle of April he was generally regarded as the leading Republican candidate. At this time there arose a discussion over the expenditures of candidates which continued to the time of the Convention. Large amounts of money were spent on behalf

of General Wood, but this was defined as necessary in a campaign of publicity. His expenditures being apparently in great excess over those of his competitors gave his opponents chance to attack him. A striking feature of the early phase of the political campaign was Senator Johnson's speaking tour on the issue of the League of Nations. He had been from the first one of the "irreconcilables," opposing the Covenant as soon as it was read before the Senate, and he insisted that the subject should go to the people for decision. According to his arguments the particular League of Nations proposed by the Paris Peace Conference would bring about conditions directly opposite to those at which it aimed—in other words would result in countless wars and commit the United States to participation in them for an indefinite period. He was not opposed to another kind of League in which nations could assemble under codified international laws, and which would allow America complete liberty of action. The main point in Senator Johnson's candidacy aside from this irreconcilable attitude toward the League of Nations was his appeal on the basis of a progressive record to the more advanced element among Democrats and Republicans.

At the presidential preference primaries in most of the States the names of three of the candidates appeared on the ballots, namely, General Wood, Governor Lowden and Senator Johnson. Johnson had a large majority in North Dakota; a plurality in Michigan, a large majority in California, and took the lead in Nebraska and Montana. Lowden was far in the lead in Illinois. Wood had a plurality in South Dakota; won in New Jersey over Johnson by a small majority, and had a plurality in Indiana. Harding carried his own State, Ohio. Johnson in California received 370,905 as against 210,561 for Hoover. On the eve of the election press estimates gave 125 votes pledged to Wood, 112 to Johnson, 72 to Lowden and 39 to Harding.

As to the Democrats it was known that the President would not be a candidate although for some time there were some who believed that his objections might be overcome. There was also a faint hope on the part of a certain element that Mr. Bryan might be nominated. The first on the list in the early part of the year was undoubtedly Mr. McAdoo, the former Secretary of the Treasury. As the President's son-in-law he was objectionable to a certain element in the party that had opposed the President but his difference with the President on certain important respects tended to offset this objection and he further appealed to the Progressive and Independent voters. Other candidates discussed but not prominently were Governor Cox of Ohio; Mr. John W. Davis, Ambassador to England and Mr. Champ Clark. In April the leading candidates were Mr. McAdoo, Governor Edwards, and Attorney-General A. Mitchell Palmer; but in the course of the month Mr. McAdoo publicly declared that he would not permit his name to be voted on in the primaries. The persons talked of as Democratic candidates were not especially active and Attorney-General Palmer was the only one who made a general speaking tour. One of the features of Governor Edwards' campaign was the use made of his strong opposition to the Prohibition amendment and on this account he was vigorously opposed by Mr. William Jennings Bryan.



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CALVIN COOLIDGE

REPUBLICAN CANDIDATES FOR PRESIDENT AND VICE-PRESIDENT

REPUBLICAN NATIONAL CONVENTION AND PLATFORM. In December, 1919, the Republican National Committee at Washington decided to call the National Convention at Chicago on June 8, 1920, the number of delegates to be 984. In January, 1920, a plan for drafting the platform went into effect. This consisted partly in the sending out of questionnaires in order to ascertain the opinion of a large number of citizens. On the information thus derived and from other sources, a series of reports was prepared for the platform committee. The Convention met at Chicago on June 8th, and was called to order by Mr. Will H. Hayes, Chairman of the National Committee. The opening address was delivered by Senator Henry Cabot Lodge of Massachusetts who presided over the first session. He expressed those views upon the League of Nations which had long been familiar to the public as characteristic of the group of politicians that he represented. He accepted the question definitely as an issue in the campaign declaring that the people must decide what they thought of Mr. Wilson's League and the sacrifice of America. He praised the Senate's opposition to the Peace Treaty as patriotic and wise. The League, he said, was seen from the debate on it to be not a league for peace but an alliance, and he criticised it for not restoring the Hague Convention, for doing nothing toward the development of international law, for not providing for a world court or judicial decisions, and for taking no measures for the settlement of non-justiciable questions. This alliance, moreover, which was silent in respect to any real peace agreement, contained clauses which threatened the existence of the United States as an independent power. As time went on, he said, the opponents of the Covenant had increased until now the number who would be willing to accept it in the form in which the President brought it back from Europe was negligible. He repeated the attacks on Article X, saying it would not only drag us into every dispute and every war in Europe and the rest of the world but would oblige our soldiers and sailors to lay down their lives for causes in which they had no interest. He defended the reservations of the Senate and the Knox peace resolution. In regard to other foreign matters he favored a firm Mexican policy under the Monroe Doctrine and censured the Mexican policy pursued by the administration; and he objected to the President's request for a mandate in Armenia on the ground that it would mean a sacrifice of American lives for an indefinite period and that the American people had already shown their sympathy for Armenia by giving them more than \$40,000,000 for her relief. In respect to domestic policy he said that it was impossible to carry out the necessary economic measures and especially the tariff legislation so long as a Democratic free trader of socialistic tendencies was in the White House.

At the second session, June 9, Senator Lodge was retained as permanent chairman, and Senator Watson of Indiana was elected chairman of the committee on resolutions. This committee was in session for nearly forty-eight hours and seemed in danger of splitting on the issues presented, especially on that of the League of Nations. The irreconcilable group headed by Senators Johnson, Borah, McCormick and others threatened to bolt if the Convention endorsed the League. At the third session, June 10, how-

ever, the committee on resolutions reported a final agreement on the part of the members and declared that the platform would be presented in a unanimous report.

The nominations were made at the session of June 11. General Leonard Wood was nominated by Governor Allen of Kansas; Hiram Johnson by Charles L. Wheeler of California; Senator Warren G. Harding of Ohio, by former Governor Frank B. Wills of Ohio; Governor Frank O. Lowden by Congressman William B. Rodenberg of Illinois; Governor Calvin Coolidge of Massachusetts, by Congressman H. Gillett, Speaker of the House of Representatives; Governor William C. Sproul of Pennsylvania by Major J. Hampton Moore of Philadelphia; Herbert Hoover of New York by Judge Nathan L. Miller of New York; Nicholas Murray Butler of New York, by Senator Ogden Mills of New York. Other candidates were Messrs. LaFollette, Pritchard, Sutherland, Poindexter, Du Pont, Borah, Knox, Watson and Warren. For four days the balloting took place with no choice in sight. General Wood whose ballot was the largest, namely 287½ at the first vote, received 314½ at the fourth. Lowden came next with 211½ at the first and 289 at the fourth. Johnson stood third receiving 133½ on the first with 140½ on the fourth. Harding came next with 65½ on the first, falling to 61½ on the fourth. There appeared to be no definite group in control and the choice at this time was largely a matter of speculation, but even then it was believed that a combination had been formed to prevent the nomination of Wood and Lowden; and it was believed that Senator Johnson was out of the running. The objections to Wood and Lowden arose mainly from alleged disclosures in regard to money contributions in their primary campaigns. After the seventh ballot the name of Senator Harding began to come rapidly forward and on the eighth ballot his vote increased to 113½. During the recess that followed the friends of Wood and Lowden rallied in the hope of effecting a combination that would check the Harding movement, but did not succeed, and when the ninth ballot was taken Harding led with 374 votes, Wood falling from 299 on the eighth to 248 on the ninth, Lowden from 307 to 121½, and Johnson to 82. The success of Harding was now assured and on the tenth ballot he received 692½ votes, that is, 200 in excess of a majority. For Vice-President the chief nominations were Governor Coolidge of Massachusetts, Senator Lenroot of Wisconsin and Governor Allen of Kansas. On the first ballot Governor Coolidge received 674½ votes. The Convention adjourned, June 12. The platform as summarized by the *Political Science Quarterly* contained the following main features:

Declares that the "outstanding features of the Democratic Administration have been complete unpreparedness for war and complete unpreparedness for peace"; pledges itself "to end executive autocracy and to restore to the people their constitutional Government"; praises the work of the Republican Congress in enacting a "program of constructive legislation"; recognizes the justice of collective bargaining as a means of promoting goodwill in industry as well as the justice of government initiative to reduce the frequency of strikes and lock-outs; denies the right to strike against the government; favors the establishment of impartial tribunals to investigate facts relative to labor disputes in public utilities, the decisions of such tribunals to be morally but not legally binding; advocates impartial commissions and better facilities for voluntary mediation, conciliation and arbitration to settle disputes in private industries; favors the establishment of an executive budget and the reorganization of federal departments and bureaus to secure a more business-like distribution

of functions; declares the President's refusal to sign the resolution repealing war-time legislation an intolerable usurpation, deserving the severest condemnation; pledges the party to a more just and simple system of taxation; opposes government ownership and operation or employee operation of the railroads; affirms the party's faith in the protective principle "for the preservation of the home market for American labor, agriculture, and industry"; declares in favor of a privately owned merchant marine, and recommends that all ships engaged in coastwise trade and all vessels of the American merchant marine pass through the Panama Canal without premium of tolls; declares in favor of revising the immigration laws to keep out undesirable and the naturalization laws to test more adequately the alien's fitness for citizenship; demands that every American citizen enjoy the ancient and constitutional right of free speech, free press and free assembly, but that no one be allowed to advocate resistance to law or the violent overthrow of the government; condemns the "vigorous malpractice of the Departments of Justice and Labor" in dealing with alien agitators; urges Congress to consider the most effective means to end lynching; promises to care generously for the maimed and disabled men of the recent war; urges Republican legislatures to ratify the suffrage amendment to enable the women of the nation to participate in the election of 1920; endorses the principle of federal aid to the states for vocational and agricultural training; favors a federal child labor law; severely arraigns the foreign policy of the Administration as "founded upon no principle and directed by no definite conception of our nation's rights and obligations" as "humiliating to America and irritating to other nations," and favors "a liberal and generous foreign policy, founded upon definite moral and political principles, characterized by a clear understanding of and firm adherence to our own rights, and unflinching respect for the rights of others"; condemns as ineffective the policy of the Administration in Mexican matters and pledges the Republican party to a "consistent, firm and effective policy toward Mexico that shall enforce respect for the American flag and that shall protect the rights of American citizens in Mexico to security of life and property"; condemns the President for asking Congress to empower him to accept a mandate for Armenia, the acceptance of which "would throw the United States into the very maelstrom of European quarrels," and finally declares that the covenant signed by the President at Paris failed signally in promoting agreement among the nations to preserve the peace of the world, that it contained stipulations "not only intolerable for an independent people but certain to produce the injustice, hostility and controversy among nations which it proposed to prevent," and that the coming Republican Administration will bring about "such agreement with the other nations of the world as shall meet the full duty of America to civilization and humanity in accordance with American ideals and without surrendering the right of the American people to exercise its judgment and its power in favor of justice and peace."

DEMOCRATIC NATIONAL CONVENTION. The Democratic National Committee at Washington decided, January 7-8, to hold the Democratic National Convention at San Francisco, June 28, and the call was formally issued, January 13, providing for the meeting of 1092 delegates. There was much less interest in the pre-convention Democratic campaign than in the Republican, and the Democratic presidential preference primaries were of comparatively slight importance. Certain States had favorite candidates. For example, the Ohio primary chose Governor Cox; the Pennsylvania primary, Attorney-General Palmer; the Oklahoma convention instructed its delegates to vote for Senator Owen; the North Carolina convention, for Senator Simmons; the Nebraska primary, for Senator Hitchcock. Only about 300 of the Democratic delegates were instructed. The chief candidates before the convention were Governor James M. Cox of Ohio, Mr. William G. McAdoo, former Secretary of the Treasury, and Mitchell Palmer, Attorney-General. The Democratic National Convention began its opening session at San Francisco, June 28 with a show of great enthusiasm for President Wilson, declaring him the unquestioned leader of his party and praising the achievements of his administration. The "keynote speech"

was made by the chairman, Senator Cummings. He attacked the Republicans as responsible for the rejection of the Treaty and contrasted the blameless record of the Democratic financial administration during the war with that of the Spanish-American war. He said that over \$40,000,000,000 had passed through the hands of the Democratic administration and that no Democrat officially had even been suspected of corruption. Senator Joseph T. Robinson of Arkansas was chosen permanent chairman and Senator Carter Glass of Virginia was chosen chairman of the committee on resolutions. The latter reported at the platform, July 2. There had been a contest in respect to the platform between the "wets" and "drys," the former led by Mr. W. Burke Cochran of New York and the latter by Mr. William Jennings Bryan. Mr. Bryan's "dry" plank was defeated before the Convention by 929½ to 155½ and the "wet" plank of his opponent was defeated by 726½ to 356. The platform as reported contained no mention of Prohibition. Mr. Bryan was again on the losing side in respect to the League of Nations. He presented a plank for ratification with reservations, which was lost by a large majority. The question of sympathy with Ireland was brought before the Convention with a view to making it a part of the platform. This was also rejected by a large majority.

There were ten candidates presented for nominations, namely: James M. Cox of Ohio; Homer S. Cummings of Connecticut; Edward I. Edwards, Governor of New Jersey; James W. Gerard of New York (former ambassador to Germany); Gilbert M. Hitchcock, Senator from Nebraska; William G. McAdoo of New York (former Secretary of the Treasury); Edwin T. Meredith of Ohio, (Secretary of Agriculture); A. Mitchell Palmer of Pennsylvania (Attorney-General); Alfred E. Smith (Governor of New York); Robert L. Owen (Senator from Oklahoma). To these were added on the following day, F. M. Simmons, Senator from North Carolina; Carter Glass, Senator from Virginia; Ambassador John W. Davis of W. Virginia; and Francis Burton Harrison, Governor-General of the Philippines. An important decision was reached in regard to the representation of women in future conventions, the Convention deciding that full sex equality should be observed and that in the future the National Committee should include one man and one woman from each State.

The voting began, July 2, and the first vote stood as follows: McAdoo, 286; Palmer, 256; Cox, 134; Smith, 109; Edwards, 42; Owen, 33; Davis, 32; Meredith, 27; Glass, 26½; Cummings, 25; Gerard, 21; Hitchcock, 18; and scattering, 102. The two-thirds necessary for nomination was 729. At the twenty-second ballot, July 3, Cox was in the lead with 430 votes against 372 for McAdoo, but the latter regained the first place in the thirteenth ballot, July 5. At the thirty-sixth McAdoo had 399; Cox, 371; and Palmer, 241. At the thirty-eighth Mr. Palmer released his delegates and at the next vote Cox had 540½. There was again a gain for Cox and a loss for McAdoo on the next ballot and on the forty-fourth ballot Cox received the nomination. For Vice-President Franklin D. Roosevelt of New York, Assistant-Secretary of the Navy was chosen by acclamation. The main features of the platform as summarized by the *Political Science Quarterly* were as follows:



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JAMES M. COX



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FRANKLIN D. ROOSEVELT

DEMOCRATIC CANDIDATES FOR PRESIDENT AND VICE-PRESIDENT

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It hails "with patriotic pride the great achievements for the country and the world" wrought by the Democratic Administration of President Wilson; declares "the League of Nations . . . the surest, if not the only, practical means of maintaining the permanent peace of the world and terminating the insufferable burden of great military and naval establishments" and advocates "the immediate ratification of the treaty without reservations which would impair its essential integrity," but does not "oppose the acceptance of any reservations making clearer or more specific the obligations of the United States to the League associates"; praises the Administration's conduct of the war; extols the federal reserve system and the financing of the war and condemns the attempt of the Republican party "to drag our public finance and our banking and currency system back into the arena of party politics"; condemns the failure of the Republican Congress to respond to the President's demand for the readjustment of the tax laws to peace conditions and denies Republican claims of economies; holds the Republican party responsible for the failure to restore peace and peace conditions in Europe, "which is a principal cause of post-armistice inflation the world over," declares that "the high cost of living can only be remedied by increased production, strict governmental economy and a relentless pursuit of those who take advantage of post-war conditions and are demanding and receiving outrageous profits," and condemns the waste of money by Congress "in vain and extravagant investigations" which revealed nothing "beyond the incapacity of Republican politicians to cope with the problems"; reaffirms Democratic tariff doctrines and declares for the policy of basing tariff revisions upon "the intelligent research of a non-partisan commission rather than upon the demands of selfish interests, temporarily held in abeyance"; favors the creation of an effective budget system to function "in accord with the principles of the constitution"; praises the Democratic record in establishing farm-loan banks and other farm legislation and endorses collective bargaining and researches into production costs; declares the Democratic record in establishing farm-loan banks witnessed by the creation of a Department of Labor, the passage of child-labor acts, workmen's compensation laws, the eight-hour law, etc., affirms that labor is not a commodity, that it should participate in the formulation of sound laws and regulations governing the conditions under which labor is performed, that labor and capital alike "have the indefeasible right of organization, of collective bargaining and of speaking through representatives of their own selection," that neither should at any time take action that would jeopardize the public welfare, that in private industrial disputes compulsory arbitration though plausible in theory, has been a failure in fact, that with respect to government service, the rights of the people are paramount to the right to strike, and that instant inquiry into the pay of government employees and equally speedy regulations designed to bring salaries to a just and proper level should be made; endorses the equal suffrage amendment and urges the Democratic governors and legislatures of Tennessee, North Carolina and Florida to complete the process of ratification in time to enable all the women to participate in the fall election; declares against child labor, in favor of child welfare, maternity care, vocational education, better conditions for working women and the reclassification of the civil service with a view to equality of the sexes; advocates generosity to disabled soldiers and declares in favor of the enactment of soldier-settlements and home-aid legislation; commends federal administration of the railroads during the war, declaring it efficient and economical despite inadequate and outworn equipment, and criticizes the Transportation Act, which the President was forced to sign upon pain of throwing the railroad situation into chaos; favors the continuance of federal aid in road building; claims credit for the restoration of the American merchant marine and pledges the party to a policy of its continued improvement; pledges ample appropriation for the continuation and extension of reclamation; endorses the creation and the work of the Federal Trade Commission; pledges itself to enact legislation for the supervision of livestock markets; upholds the President's Mexican policy and advocates the recognition of the new Mexican government when it has shown its ability to maintain order; declares that the United States should render every possible and proper aid to the people of Armenia in their efforts to maintain a government of their own; expresses its sympathy with the people of China, Czechoslovakia, Finland, Poland, Persia and others who have recently established representative government, and "within the limitations of international comity and usage" repeats previous expressions of sympathy for Ireland in its aspirations for self-government; favors the granting of independence to the Philippines without unnecessary delay; favors the granting to Porto Rico of the traditional territorial form of government, with a view to ultimate statehood; supports the policy of non-admission of Asiatic immigrants; defends the Post-Office Depart-

ment "against a malicious and designing assault" and favors the fair and just treatment of all government employees; denies the alleged interference of the Administration with the freedom of the press and freedom of speech; and finally pledges itself to the enactment of laws strengthening the present statutes against corrupt practices, in view of the "shocking disclosures of the lavish use of money by aspirants for the Republican nomination" and the recent conviction of a Republican Senator from Michigan, upon whose seat "the present organization of the Senate with a Republican majority was made possible" by the criminal transgression of the law limiting expenditures on behalf of a candidate for the United States Senate.

SOCIALIST NATIONAL CONVENTION. The nominating convention of the Socialist party was held in New York City May 8-14. The platform was framed by Mr. Morris Hillquitt of New York and was criticized by the extreme radicals as too conservative. The Convention voted the majority report of its committee on foreign relations, May 14th, declaring that the Socialist party of America adhered to the "Third International," but on the understanding that its international delegates should not be bound to the acceptance of any special means of attaining the Socialist commonwealth, as for example, by a dictatorship of the proletariat. Its adherence to the International was not to be subject to such a condition and delegates to the International were also to be instructed to take part in movements for the unifying of Socialist bodies throughout the world into a single international organization. A radical substitute offered by the minority of the committee, which merely declared the adherence of the party to the Third International without any qualifications, was voted down by 90 to 40. The Convention nominated for President, Eugene V. Debs, who was serving a ten years' sentence in the Federal penitentiary at Atlanta for violation of the Espionage Act. His name was received with great enthusiasm. A committee was appointed to present a petition to Attorney-General Palmer for the release of Debs, declaring that the practice of condemning citizens for the expression of views opposed to the party in power was repugnant to the spirit of democracy and that all the other Powers that had taken part in the war had pardoned their political offenders. It added that the plea that the United States was still at war was merely a quibble.

The Convention debated for a long time the question whether the Socialist party should retain its declaration that it did not purpose to interfere with the internal affairs of labor unions and it finally decided to retain it but added a statement to the effect that it approved the organization of workmen into a single working-class body, in other words, the One Big Union programme. After a debate in which churches and religion were alternately attacked and defended, it decided against any references to capitalist control of churches.

FARMER-LABOR CONVENTION. Representatives of the Committee of Forty-Eight, the Non-Partisan League, and other dissident groups met in convention at Chicago, July 11. Senator R. M. La Follette of Wisconsin refused to stand on a national ticket and the convention nominated for President Parley P. Christensen of Salt Lake City, Utah, and for Vice-President Max S. Hayes of Cleveland, O. Meanwhile several factions including the Single Tax group had withdrawn from the meeting. The platform was based in general upon the principles for which the Committee of Forty-Eight had for two years been

contending in its propaganda (see **FOETY-EIGHT, COMMITTEE OF**). It insisted that the two old parties were maintained by "the invisible government" of this country in order to "confuse the voters with false issues." Specifically it demanded among other things: Restoration of right of free speech, etc.; protection of workingmen's right to strike; amnesty of political prisoners; election and recall of Federal judges; withdrawal from participation under the Treaty of Versailles in the subjection of conquered peoples; instant lifting of the blockade against Russia; immediate repeal of the Esch-Cummins law; public ownership of railways, mines, and natural resources, etc.; legislation on behalf of the farmers; increased share of labor in control of industries; right of civil service employees to organize; and a long programme of social legislation in respect to hours of work, workingmen's insurance, pensions, women in industry, abolition of private employment of detective and strike-breaking agencies, etc.

SOCIALIST LABOR CONVENTION. The National Convention of the Socialist Labor party was held in New York City, May 5-10, the delegates numbering about fifty and representing twenty States. It nominated for President William W. Cox of St. Louis, organizer for the Workers' International Industrial Union; and for Vice-President, August Gillhaus of Brooklyn. In its platform it described itself as "the only party in this country that blazes the trail to the Workers' Industrial Republic." After denouncing modern capitalist society and declaring that private property in the means of life has become a social crime, it called upon the wage-workers to organize themselves into a revolutionary political body and "to organize themselves likewise upon the industrial field into a Socialist industrial union, as now exemplified by the Workers' International Industrial Union, in keeping with their political aims."

PROHIBITION CONVENTION. The Prohibition party met in National Convention at Lincoln, Neb., July 22, and adopted as the principal plank in its platform the condemnation of attempts to nullify the Eighteenth Amendment, saying, "The organized liquor traffic is engaged in a treasonable attempt to nullify the amendment by such modification of the enforcement act as will increase the alcoholic content of beer and wine and thus thwart the will of the people as constitutionally expressed. In face of this open threat the Republican and Democratic parties refused to make platform declarations in favor of law enforcement though petitioned to do so by multitudes of people. Thus the Prohibition party remains the sole champion of national prohibition. . . . The issue is not only the enforcement but also the maintenance of the law to make the amendment effective. . . . The proposed increase in the alcoholic content of beverages would be fraught with grave danger in that it would mean the return of the open saloon with all its attendant evils." The convention nominated for President Aaron Sherman Watkins.

THE ELECTION. The extent of the Republican victory exceeded the most sanguine predictions of the party's prophets. The vote for Harding was 16,181,289 and for Cox, 9,141,750, giving the former a plurality of 7,039,539. The vote of the Presidential electors was: Harding, 404; Cox, 127. The Socialist candidate Eugene V. Debs received 941,827 votes (exclusive of eight States

for which returns were not available at the close of the year and which gave 23,582 votes for the Socialist candidate four years before). The Prohibition vote in the 24 States in which it had a column on the ballot was 195,923; and the Farmer-Labor vote in the eighteen States in which it had a column on the ballot was 350,267. The women's vote was not segregated from the men's except in Illinois (q.v.). For votes by States, see articles on States, paragraph *Elections*.

Both Houses of Congress were carried by the Republicans. According to the unofficial figures of the Clerk of the House at the close of the year the Republicans in the new House numbered 307; the Democrats, 127; and the Socialists, 1; a Republican majority of 179, the largest in the history of the party. Members of the existing House who were not returned numbered 119. The only Socialist elected was Mr. Meyer London of New York. The only woman elected was Miss Alice M. Robertson of Oklahoma. In the Senate the Republicans retained all the seats they held and gained 10 from the Democrats. Their actual majority was 22.

Tennessee went Republican by a majority of 12,000. West Virginia, Mississippi, Maryland, and Oklahoma also went Republican, and Kentucky remained Democratic by a narrow margin. There were also gains in various localities regarded as strongholds of "solid" Southern Democracy.

UNITED STATES MILITARY ACADEMY. An institution for the practical and theoretical training of cadets for the military service of the United States. Since the World's War the mission of West Point became the preparation of officer personnel for the next possible future war. It is situated at West Point, N. Y., and was opened in 1802. The strength of the corps of cadets was 1020. The maximum authorized strength of the corps is 1334. There were about 180 officers in the faculty. The funds of the institution are appropriated annually by Congress. The candidates must be between the ages of 17 and 22, but it was provided that in the calendar years 1919, 1920 and 1921, any appointee who had served honorably in the armed forces of the United States or in the armies of the Allies in the late war and possessed the other qualifications might be admitted up to the age of 24. From 1802 to 1920 inclusive, the number of cadets has been 6809. Superintendent, Brigadier-general Douglas MacArthur, U.S.A.

UNITED STATES NAVAL ACADEMY. A school for the training and education of naval cadets, situated at Annapolis, Md.; founded in 1845. In 1920 there were enrolled 1803 midshipmen and the faculty numbered 245. Candidates are selected by competitive examination or otherwise for mention by Senators, representatives and delegates in Congress. The law authorizes the appointment of 100 enlisted men each year by a competitive examination. The candidates are required to be citizens of the United States and the age limits are 16 to 20 years. There are strict qualifications in regard to physical ability. The course lasts four years. Superintendent, Rear-admiral A. H. Scales, U.S.A.

UNIVERSALISTS. Statistics for 1920 for this denomination show that it had a total membership of 55,000 with 550 ministers and 617 churches while the Sunday Schools show a membership of about 55,000. The year 1920 marked



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PROMINENT REPUBLICAN PRESIDENTIAL CANDIDATES



the 150th anniversary of the founding of the Universalist Church in America and was fittingly celebrated at Good Luck, N. J. where John Murray, the founder, first landed, and in Gloucester, Mass., where he held his first pastorate. Over 10,000 persons attended the latter celebration. The "Great Drive" of 1919 for a million dollars for advancing the work of the church is being followed by "The Murray Anniversary Crusade" to double the membership of the preaching and teaching of many other churches. Missionary work is maintained in Japan with headquarters in Tokyo, a new church and school plant in Shizuoka, made possible by the money Drive, and a distinctive social service work in Nagoya. Home missionary work is being done in the South and West where there are few Universalist churches at the present time. The Women's National Missionary Association unites the women of the church in both Home and Foreign Missions. Theological schools are maintained at Tufts College, Mass., St. Lawrence University, Canton, N. Y., and Chicago University. Secondary schools are maintained as follows: Dean Academy, Franklin, Mass., Goddard Seminary, Barre, Vt., Westbrook Seminary, Portland, Me., and a school for negroes at Suffolk, Va. The secretary of the denomination is Rev. Roger F. Etz, Boston, Mass.

UNIVERSITIES AND COLLEGES. ATTENDANCE. The statistics of registration of thirty universities for the academic year 1918-19 have been gathered and published by Dr. Raymond Walters. These institutions enrolled a total of 183,620 students. If we exclude the summer enrolment, New York University with 11,237 students heads the list. California comes second with 9435 students. Michigan, Columbia, Illinois, Minnesota, Pennsylvania, Wisconsin, Northwestern and Ohio State follow in the order named, each having in excess of 6000 students. When the enrolment includes the summer school, Columbia, with 15,828 students, ranks first. California has 12,609 students, New York University, 12,017 students, and Chicago, Michigan, Wisconsin, Illinois, Minnesota and Pennsylvania stand in the order named, each with more than 8000 students.

The total enrolment in these institutions, including summer schools, was 103,853 in 1914. The total registration of these thirty institutions showed a gain of 47 per cent over the registration for 1914. The most noteworthy gain made by any institution in this five-year period was New York University with 107 per cent advance in regular enrolment.

College and university registrations as reported to the *Evening Post* by registrars throughout the country up to October 22 indicate a very considerable increase over the previous year. The increase in attendance at various institutions has created some very perplexing problems. Dormitory and housing facilities are being taxed to the utmost. Northwestern University has been compelled to limit the number of women students because of its inability to provide for them. Various institutions are at present compelled to provide for classes of such numbers as would have been deemed impossible to instruct only a few years ago. Single classes enrolling 100 or more students are comparatively common. There are instances where the number approaches 1000. It remains to be seen how effective instruction can be under these conditions.

The great increase in attendance comes at a time when it is difficult to secure properly trained instructors who are willing to accept the comparatively small salaries offered by colleges and universities. As a result, there is a rather keen competition among the institutions, some of which because of their inability to raise the salaries have lost a large proportion of their promising young instructors.

INCOME OF COLLEGES AND UNIVERSITIES. In the course of the year the Bureau of Education made public a report showing in detail the income of normal schools and of colleges and universities for fifty years from 1870 to 1920, inclusive. According to these figures the income of the normal schools in 1920 was \$27,000,000 or about 130 times as much as in 1870. During the same period the income of colleges and universities was increased about 36 times, being \$182,000,000 in 1920.

College administrators and the officers who are concerned with the control of the normal schools insist that the income for their institutions must be greatly increased or the colleges and universities will be compelled to discontinue some of the lines of their present efforts. Some of the universities completed the year ending June 30, 1920, with very large deficits. Yale University, for example, had a deficit that represented approximately the income on a \$10,000,000 endowment. The alumni of that institution came to its rescue and gave an amount that more than met the indebtedness.

The movement toward higher tuition fees, which has been in progress for the past few years, continued during the past year. The amount received from these increases, however, is comparatively small and in many institutions the number of free scholarships has been increased in order to assist worthy students. During the past several years institutions have received large endowments and the state universities have been given increased appropriations. Considering the increase in students and the higher costs, it is doubtful whether the colleges and universities of the country are in as good condition financially as they were in 1914. If the increase in attendance continues, as it bids fair to do, the endowed institutions and the States will face the problem of doubling their facilities during the next decade.

GIFTS AND BENEFACTIONS. During 1920 a large number of the institutions of higher learning made successful efforts to secure increased endowments. Increased resources were generally sought for the purpose of increasing the salaries of instructors and meeting increased demands for research. The excessive cost of building has prevented any considerable extension of plants. Among the more noteworthy gifts and benefactions announced during the year are the following: Mr. J. Ogden Armour has made a further gift of \$6,000,000 to the Armour Institute. Bates College is to receive \$500,000 from the fund to be raised by the Northern Baptist Convention. Bowdoin College receives \$150,000 by the will of the late Dr. Thomas Upham Coe. Brown University received \$500,000 from John D. Rockefeller, Jr.; \$250,000 from Louisa and Jesse H. Metcalf, and \$100,000 by the will of the late Rush C. Hawkins. The University of Buffalo received \$250,000 from an anonymous giver and \$400,000 from Mr. O. E. Foster.

The Carnegie Corporation gave \$250,000 to the Medical College of the University of Cincinnati to endow a chair in memory of Dr. Christian R. Holmes. Cornell University received \$100,000 from Mr. W. G. Mennen and Mrs. Emma Mennen Williams. Cornell also received \$500,000 from August Hecksher. Dartmouth College will ultimately receive more than \$300,000 by the will of the late Richard K. Tyler. Under the will of Sanford H. Steele, Dartmouth receives \$250,000 for instruction and research in chemistry. Denison University received \$1,000,000 from Col. E. A. Deeds. The University of Maine received \$150,000 by the will of the late Dr. Thomas Upham Coe. Under the will of Mrs. Georgiana B. Wright Harvard University becomes the residuary legatee of an estate valued at more than \$1,000,000. The University of Michigan has received an anonymous gift of \$1,000,000, and an endowment of \$2,000,000 from Levi H. Barbour for the education of women of the Far East. Mount Holyoke College received \$100,000 from Edward S. Harkness.

New York University received \$100,000 from Dr. William H. Nichols. Under the will of the late Rush C. Hawkins Norwich University becomes residuary legatee of an estate valued at more than \$300,000. The College of Homœopathy of the Ohio State University received \$400,000 from Charles F. Ketter for medical research. The family of Henry Phipps has given \$500,000 to the Henry Phipps Institute of the University of Pennsylvania for the study of tuberculosis. Radcliffe College received \$175,000 by the will of the late Annette Perkins Rogers. Vanderbilt University received \$250,000 by the will of the late William K. Vanderbilt. Throop College of Technology received an anonymous gift of \$1,000,000. Wesleyan University received approximately \$1,000,000 by the will of the late William F. Armstrong. Under the will of the late Ohio C. Barber Western Reserve University will receive nearly \$5,000,000. By the will of the late Francis Lynde Stetson Williams College receives a residuary estate valued at more than \$1,000,000. The University of Vermont received \$100,000 by the will of the late Rush C. Hawkins. Yale University received an anonymous gift of \$150,000 for a department of university health. Yale also received \$300,000 from William L. Harkness.

On January 1, 1920, Mr. John D. Rockefeller gave to the General Education Board the sum of \$50,000,000 to be used in the discretion of that Board in increasing salaries of instructors in colleges and universities. During the year the General Education Board has appropriated to 98 colleges a total of \$12,851,666 on condition that these institutions add the sum of \$30,613,334. This would make a total of more than \$43,000,000 added to the endowment for teachers' salaries.

Never before has there been such a determined effort to increase endowments. The following institutions have started endowment drives that would net over \$80,000,000: Brown University, \$3,000,000; Bryn Mawr, \$3,000,000; Chicago University, \$10,000,000; Cornell University, \$10,000,000; Harvard University, \$15,250,000; Mt. Holyoke College, \$3,000,000; New York Post Graduate Medical School, \$2,000,000; New York University, \$6,450,000; Princeton University, \$14,000,000; Smith College, \$4,000,000; Teachers College, Columbia University, \$6,000,000; Uni-

versity of Cincinnati, \$2,000,000; Wesleyan University, \$3,000,000.

To a very large extent the institutions concerned have been successful in their drives. A considerable number of other institutions have increased their endowments by amounts varying from \$500,000 to \$1,000,000. It is well within bounds to predict that the increase in the endowments of institutions of higher learning during the year 1921 will be in excess of \$100,000,000. This will be more than one-fourth as much as the total endowment, including all productive funds owned by all colleges and universities as late as 1915.

THE CARNEGIE FOUNDATION FOR THE ADVANCEMENT OF TEACHING. The Fourteenth Annual Report of the President shows that the trustees held in trust on June 30, 1919, the following securities given at their face value: For general endowment, bonds and other securities amounting to \$13,192,000; for the Division of Educational Enquiry \$1,250,000; a reserve fund to be used, principal and interest, in the payment of pensions accruing after 1928, \$7,031,000; a reserve fund to be used in assisting institutions hereafter admitted to association with the Foundation, either in retiring allowances or in assisting in the inauguration of the contributory plan, \$320,000; and an emergency reserve \$165,000, making a total of \$21,958,000. The President reported a total income of \$1,555,987.60, and, in addition, \$50,486.55 from the Endowment of the Division of Educational Enquiry. The current expenditures for the year were as follows: Retiring allowances and pensions to officers and teachers and widows, a total of \$828,385.58; expenses of administration \$49,359.97; publication \$10,888.62, making a total expenditure from general endowment of \$888,634.17. The expenditures for the Division of Educational Enquiry were: General, \$4,824.85; study of legal education, \$8,685.11; study of training of teachers, \$16,058.08; study of engineering education, \$5,986.78—a total of \$35,554.82. A total of 530 persons received allowances from the Foundation. The allowances vary in amount from \$338.78 to widows of professors and officers in institutions not on the associated list to \$2000.92 for professors and officers in institutions on the associated list, retired on the basis of age. The general average of retiring allowances is \$1,547.59.

The President considers many matters relating to the work of the Foundation, in particular the new contributory method of teachers' allowances is discussed in detail. The section devoted to the Division of Educational Enquiry discusses current tendencies in education and describes the investigations conducted by the division in the matter of justice and the poor, legal education and the training of teachers.

The part of the report which has received greatest attention is entitled "College Government and the Teacher's Salary." President Pritchett says that "at the present time many of the endowed universities and colleges are appealing to the public for sums of money that before the war would have been considered out of all proportion to the ability of the public to give. The basis of the request is in nearly all cases the desire and the necessity of increasing the salary of the college teacher." President Pritchett is in accord with the plan of raising the salary of professors who attain a high order

of usefulness, either as teachers or as investigators. He regards this as a matter of simple justice.

The report raises some doubt regarding the efficiency of our universities. It states: "The larger American universities are spending to-day more money annually than was ever spent by any institution in the world devoted to teaching and to research. The American university has expanded into this expensive and highly complicated institution in the last twenty-five years, from the undergraduate college. Its growth has been like that of a government bureau, almost wholly by accretion. Graduate schools, professional schools, departments of research have been superimposed on the college without any consistent coordination of undergraduate and professional activities. A department once begun is never cut off. The American university to-day is a congeries of schools and departments rather than an organic institution."

The report further asserts: "Research in various fields of knowledge has been attempted by nearly all institutions of university rank. The development of a true spirit of research is a necessary part of every true university, but much of that which has gone on in American universities under the name of research is in truth only an imitation of research, and upon it great sums of money have been expended. In the sharp competition for the reputation supposed to come to a university from carrying on research, the obligation to teach has become less and less realized, and the teaching of undergraduates, in some of our great institutions, is poor. In some institutions there is slight opportunity for the great body of students to come in contact with a real teacher."

President Pritchett urges that the increasing of salaries alone will not bring about the desired results within our universities. He says: "The question is really one of making the profession itself a calling to which men shall be attracted by the intellectual and cultural opportunities which it presents."

The article closes with the two questions: What is the primary purpose of the university? And how far may that purpose be diluted or impaired by the extension of university activities into new fields?

ENTRANCE REQUIREMENTS. The use of intelligence tests for determining the fitness of students to enter college is becoming quite general. During the past year many of the important colleges and universities have employed the tests and are now watching the results in order to determine their reliability. In every case the use of intelligence tests is optional with the student.

The entrance requirements of colleges and universities are undergoing a gradual change in the direction of easier and more satisfactory admissions from the public schools. During the year Dartmouth College has made an announcement of the new requirements to go into effect at the beginning of the academic year 1921-22. In announcing the new plan President Hopkins states: "The evidence in hand indicates that in the great majority of cases the man who shows marked ability in his school work preparatory to college demonstrates like ability in college work. It is to such men in approved schools that Dartmouth would offer a significant procedure for qualifying for entrance to the Col-

lege. It is to this group further that Dartmouth would definitely assure admission under circumstances in which of necessity the College can admit but a decreasing proportion of those who apply for enrolment in its student body."

The vote of the faculty reads as follows: "Beginning with the year 1921-22 any student from an approved school graduating with an average in scholarship for the four years of his school course, which places him in the first quarter of his class, and offering three units of English and two and one half units of mathematics among his list of subjects, will be admitted without condition."

The University of Pennsylvania has announced two changes in entrance requirements to go into effect September, 1921. The first of these involves admission from approved schools. The University proposes to keep a record of all approved schools and to classify each school not only by the work that its graduates have done prior to entering the University, but by the records they make while in the University. Students who apply for admission by certificate from secondary schools will in general be admitted if they rank in the upper half of their graduating class. If, however, the group of students certified to the University by a given school during the two or three previous years did work that averaged considerably above the average of the freshman class in the University, then that school will be granted the privilege of certifying students from the upper three-quarters of its graduating class and in cases where the work of the University has been extremely good, the school may obtain the privilege of certifying from the whole of its graduating class.

On the other hand, if the work done in the University by students from the school has fallen below the average of the freshman class in the University, then that school will have the privilege of certifying students only from the upper quarter of its graduating class.

The second change relates to the admission of students graduating from a first-class school, but whose rank may not be high enough to secure a certificate. Such students may secure admission either by comprehensive examinations in four subjects, one of which must be English, the others optional with the applicant, or, they may elect to take an examination in their ability to use the English language and to supplement this by a general intelligence test to determine the applicant's mental power and alertness.

Harvard College has also announced changes in admission requirements. Heretofore candidates who entered Harvard under the so-called "old plan" have been required to pass examinations in studies amounting to sixteen and one half units of school work, except that those who presented both elementary Latin and elementary Greek were admitted without condition on fifteen and a half points of school work. The number of units required for admission has now been reduced fifteen and the Committee on Admissions has been authorized also to admit without conditions final candidates whose combined school and examination records justify the belief that they are ready for college work, even if their examination record is slightly defective. The present absolute minimum of fourteen points for such persons remains in force.

For the purpose of making the requirements somewhat more flexible, the so-called "new plan"

of admission, which has been in effect for several years and provides that a candidate must present evidence of an approved school course satisfactorily completed and must show in examinations in four important subjects that his scholarship is satisfactory, has been modified so that the candidate's school course need not necessarily have extended over four years. Candidates will now be admitted if their school course has been the equivalent of four years' study, and they are able to meet the other requirements. Exceptions are also made to the requirement that the candidate's school course must have included languages, science, mathematics and history. If the candidate is an exceptional student, he will not be excluded because he has omitted one of these subjects.

It is expected that these changes will make it easier for boys to pass the entrance examinations, who have prepared at high schools which are not accustomed to training boys for Harvard.

INTERNATIONAL EDUCATIONAL RELATIONS. *The Institute of International Education.* This Institute was established February, 1919, by the Carnegie Endowment for International Peace. As stated by one of its directors, its general aim is to develop international good will by means of educational agencies and to act as a clearing house of information and advice for Americans concerning things educational in foreign countries and for foreigners concerning things educational in the United States. The Institute pays the travelling expenses of professors on sabbatical leave who are willing to lecture in foreign universities and have been invited to do so. Fifteen such professors were sent out during 1920. Several European professors have been assisted in coming to this country to lecture at various colleges and universities.

The Institute has entertained many distinguished visitors and commissions upon their arrival in this country. Dr. Stephen P. Duggan of 419 West 117th St., New York City, is the executive officer of the Institute.

THE AMERICAN-SCANDINAVIAN FOUNDATION. This Foundation has established 20 travelling fellowships of a value of at least \$1,000 each to be awarded to students, men and women, for technological research and humanistic study in the universities of Sweden, Denmark, and Norway.

AMERICAN FIELD SERVICE FELLOWSHIP FOR FRENCH UNIVERSITIES. The Society for American Field Service Fellowships for French Universities has offered fellowships, not to exceed 25, to graduates of American colleges for research in French universities during 1921-22. The fellowships are granted for one year and renewable for a second year. They have an annual value of \$200 and 10,000 francs. The chairman of the Advisory Board is Prof. Raymond Weeks, Columbia University, and the Executive Secretary is Dr. I. L. Kandel, 522 Fifth Avenue, New York City.

FRENCH SCHOLARSHIPS. The French Government has provided 20 scholarships in French lycées and six scholarships in French universities to highly qualified American girls for the academic year 1920-21.

FOREIGN STUDENTS IN AMERICAN INSTITUTIONS. The Committee on Friendly Relations among Foreign Students has recently published a directory of foreign students in the institutions of the United States. The directory shows that there are 6636 foreign students scattered in 466

institutions. Of these 533 students are found in 20 institutions in California. The State of Illinois has 725 students, representing 65 countries, located in 41 institutions. A total of 586 students, coming from 72 different countries, are in 25 institutions in Massachusetts. New York leads in the number of foreign students, having 1210 students from 80 different foreign countries scattered throughout 36 institutions.

The proper care of this large number of students involves a question of great importance. The United States is receiving a considerable number of students from the Far East and an increasing number from the South American countries. There is every indication that students from these sections will come in still greater numbers. In general, they represent those who will become leaders when they return to their respective countries, and through them the United States has the opportunity to establish relationships that will be very desirable. In few institutions, however, is there any understanding or appreciation of the difficulties that confront these students. In general, instructors are not familiar with the social, economic and political conditions that obtain in the student's home country. Consequently the instruction that is offered is often inadequate. Various institutions have been giving this matter careful and intelligent consideration. In addition, several prominent organizations are lending their aid in the matter. Among these is the Commission for Relief in Belgium's Educational Foundation. This Foundation, which is considered one of the greatest in the world, provides for the education of about 5000 students. Last September 23 Belgian students were given scholarships in American universities.

The Association of American Colleges has brought to this country and placed in different universities 182 French girls and about 20 French men. These students receive scholarships paying college fees and living expenses. Boston University has arranged for an exchange of professorships in mathematics for the present academic year with Tsing Hua College, Peking, China.

NEW PRESIDENTS. The close of 1920 finds many colleges and universities without presidents. The institutions of higher learning have lost the services of those who for a generation have been among the educational leaders of the country. Among these men may be named Dr. Edmund James James, President of the University of Illinois since 1904, Dr. Jacob Gould Schurman, President of Cornell University since 1892, Dr. Arthur Twining Hadley, President of Yale University since 1899, Dr. Edgard Fahs Smith, Vice-Provost and Provost of the University of Pennsylvania since 1899, and Dr. Charles William Dabney, President of the University of Cincinnati since 1904. The institutions concerned have known in advance of the presidents' actions, yet none of these positions has been filled.

The difficulties which universities have experienced in securing properly qualified presidents have led to considerable discussion during the year regarding the proper type of college and university administrator. Some have maintained that the man of affairs should make the most competent college president. Dartmouth College made such a selection and their experience has been very happy. Yet almost without exception other institutions have sought their presidents from the so-called academic group.

Among the persons who have been elected to college presidencies are the following: Dr. William J. Hutchins was made president of Berea College. Dr. Wallace W. Atwood was elected president of both Clark University and Clark College. Dr. Thomas J. Marshall is the new president of Glendale College. Dr. Clarence W. Greene was elected president of Hedding College. Dr. A. H. Upham was made president of the University of Idaho. Dr. D. J. Evans was chosen president of William Jewell College. Dr. Arthur Andrews was appointed president of the Junior College at Grand Rapids. Dr. E. H. Lindley is the new chancellor of the University of Kansas. Dr. James M. Gordon has been made the head of Henry Kendall College.

Dr. Marion L. Burton was made president of the University of Michigan. Dr. Lotus D. Coffman is the new president of the University of Minnesota. Dr. Walter D. Scott was made president of Northwestern University. Dr. Dice R. Anderson was elected president of Randolph-Macon Woman's College. Rev. William F. Robinson was appointed president of St. Louis University. Dr. J. G. Bowman is the new chancellor of the University of Pittsburgh. Rev. Ranson Brinkerhoff Ogilby was made president of Trinity College. Dr. Rees Tulloss was made president of Wittenburg College. Rev. William Fletcher Quillian is the new president of Wesleyan College. Dr. Alice Hill Byrne is the new president of the Western College for Women. Dr. Guy W. Bailey was elected president of the University of Vermont.

NEW INSTITUTIONS. *The Ford Technical Institute.* The Ford Motor Company of Detroit has announced the establishment of an educational department having university rank. The Institute will grant degrees in mechanical, electrical, and chemical engineering. The Institute occupies buildings of its own which are most completely equipped for the type of instruction given. The Institute has opened with as large an enrolment as the capacity will permit and there is a waiting list composed of many of the most promising technological students of the country.

School of Medicine, Surgery and Dentistry, University of Rochester. The University of Rochester has received \$5,000,000 from the General Education Board and \$4,000,000 from Mr. George Eastman to establish in the City of Rochester in connection with the University a School of Medicine, Surgery and Dentistry.

Goodyear Industrial University. Early in the year the Goodyear Industrial University at Akron, Ohio, was formally opened. The institution occupies Goodyear Hall, which is the recreational and educational institution of the Goodyear Tire and Rubber Company. The institution opened with a faculty of 117 instructors and over 5700 students in 600 separate classes. The announcement states that "the university is fundamentally an industrial institution, teaching such branches of academic and scientific work as are necessary for the development of American industry in addition to regular courses." The 30,000 or more persons employed by the Goodyear Company may receive instruction varying from rudimentary grade school studies to standardized post-graduate courses without tuition.

TEACHER TRAINING. The scarcity of teachers and the increasing importance placed upon education has served to focus attention upon the training of teachers.

Early in the year there was an official announcement of the Harvard Graduate School of Education with an endowment of \$2,000,000. At the opening of the school last September, 90 students were enrolled. About one-third of these students were women. The admission of women as candidates for the Harvard degree is an innovation.

Yale University has established a Department of Education in connection with the Graduate School of the University. The announcement states that the purposes of instruction in education are the following: (1) To prepare both men and women for service in the educational field, especially in public schools. Courses are designed to fit superintendents, supervisors, principals, directors of special activities, research specialists, normal and college instructors in education, and classroom teachers, for the distinct types of service that each must render. (2) To contribute through research to the solution of practical problems of organization, administration, instruction, and hygiene in schools of all grades. (3) To render expert, practical assistance to school officials, especially in Connecticut, in the immediate solution of their school problems.

UNIVERSITY UNION, AMERICAN, IN EUROPE. The American University Union in Europe was founded on July 15, 1917, by a group of university and college men in New York City. It had two purposes: First, to devote itself to the general well-being of the university and college men who were to cross the sea to fight, or to serve the cause of the Allies in other ways; and, second, to become, after the war, a permanent agency for attracting students to Europe for study, for turning the stream of American students to the institutions of learning of the Allied countries, and for cultivating closer educational and intellectual relations between Europe and America. The organization is controlled by a Board of Trustees directly and broadly representative of American universities, colleges, and educational associations. Some fifty of the more important American institutions are subscribing members. On October 30, 1917, the Union in Paris which had taken over the Royal Palace Hotel, opened that hotel as a club freely accessible to American university and college men who were serving the Allies in Europe. On June 31, 1919, the Union as a club for American soldiers closed its doors, and turned to its permanent task—educational work. The Union now fulfills several functions. It is a center for American students in Paris, with a library furnished with American papers and periodicals, and accommodations for study, at their disposal. It is a bureau of information for American students, both men and women, where they can apply for advice regarding the institutions of learning, Parisian or provincial, the conditions and formalities of admission to them, courses that can be advantageously followed, the degrees offered to foreigners, the exchange of French and English lessons, the vacation courses in Paris and in the provinces, the best schools for learning the French language, the cost of living, the procuring of lodgings, etc. Catalogues of the important establishments of higher learning in France are on file for reference. The Union is also a bureau of information for French students or professors who desire information concerning American institutions of learning, the

conditions of entrance for foreigners, the courses, etc. The catalogues of such institutions are on file for ready reference. Attention is given also to the social side of student life, and by reunions and sociabilities an endeavor is made to establish contacts that will widen the students' French horizons. Finally, the Union aims in general to diffuse among American universities and colleges all sorts of information concerning the educational advantages open to Americans in France, and to offer in France information concerning what America has to present in the same fields. In this aspect, its purpose is to be a clearing-house of international educational information.

The Union is represented in London by its British Division, the Union in Paris being properly known as the Continental Division. The offices of the British Division are at 50 Russell Square, W.C.1., London. There a work is carried on for England analogous to the work done in Paris.

UPPER AUSTRIA. Before the downfall of the Austro-Hungarian Empire, a crownland of Austria. Area, 4626 square miles; population (1911), 853,006, of whom 843,146 were Austrian subjects. Capital, Linz.

UPPER SENEGAL AND NIGER. A constituent colony of the government-general of French West Africa. (q.v.)

UPPER SILESIA. A region comprised within former Prussian Poland, whose limits were indeterminate throughout the year, awaiting settlement by plebiscite (see below, *History*). Estimated area, 13,230 square miles; estimated population 1,931,240. The chief interest in the region arises from its great mineral wealth. In regard to its resources in this respect, the following information was supplied by the United States Bureau of Foreign and Domestic Science in 1920. Reports for the year 1919 showed that in 1919 there were 63 anthracite coal mines operating in Upper Silesia, wherein 1235 steam-hoist engines were used and 388 electric motors were in use, as against 405 in the preceding year. There was 35 per cent less coal produced in the mines in 1919 than in the previous year; 21,204,043 tons of coal were shipped from these mines in 1919, as against 36,113,360 tons in 1918 and 40,337,215 tons in 1913. Iron production has decreased considerably in the last 10 years in Upper Silesia, as is shown below: 1901, 457,126 tons; 1913, 138,204 tons; 1918, 62,194 tons; 1919, 61,469 tons. Pig-iron production has been as follows: 1913, 994,601 tons; 1918, 696,146 tons; 1919, 459,954 tons. The value of pig-iron and its by-products amounted to 186,420,000 marks in 1919, as against 125,890,000 marks in 1918. Foundry production declined 30 per cent in 1919 as compared with 1918. Upper Silesia produced 24,451 tons of steel castings in 1919, as against 97,757 tons in the previous year. The same district produced 439,227 tons of ingot iron, or only 34 per cent of the production in 1918. The production of wrought iron decreased by 51 per cent. The production of crude zinc amounted to 74,023 tons, valued at 138,608,000 marks, as against 122,961 tons, valued at 110,890,000 marks, in 1918. The production of lead in Upper Silesia in 1919 was 17.7 per cent less than for 1918, and the production of silver declined by 27 per cent. The total number of miners employed in Upper Silesia in 1919 was 226,445. After the repatriation of war prisoners this num-

ber was reduced to 233,339. Among the miners employed here in 1919 was a large number of Russian prisoners of war who are now regarded as settled workmen.

HISTORY. The Peace Conference, in view of the large majority of Poles in the region, proposed to return Upper Silesia to Poland, but owing to the protests of the Germans, decided to leave the question to a plebiscite. According to the Poles and their friends, the Germans from that time on resorted to every device that could prevent the people from attaching themselves to Poland. They were accused of planning secretly to use force and of organizing rifle clubs, defense organizations, etc., to that end. They hoped to carry this policy to success when in the summer months Poland was threatened with destruction at the hands of the Bolsheviks. Disappointed in this, they resorted to other means, especially to propaganda. They promised the Upper Silesians self-government and tried to persuade them that they would have a far greater measure of liberty under German than under Polish rule. They gave them to understand that the country would form an independent part of Germany like Bavaria and that the people would decide everything that pertained to their own affairs. They would have moreover their representatives at Berlin. This went too far for the "Old Prussians" who regarded Upper Silesia as belonging especially to Persia. To transform Silesia into an independent German state would rob Persia of its conquest. To meet this objection it was said that after the plebiscite changes might be made in the arrangement, thus implying that the claims of Prussia might subsequently be recognized. At the close of the year French and Polish writers were accusing the Germans of trying to control the plebiscite, and of planning extensive German colonization of the region. There was a rumor that Germany had proposed to Poland a compromise whereby the country would be divided between Germany and Poland without resorting to a plebiscite. The rumor was denied, but the denial was attributed to German propaganda. The matter was the subject of incessant controversies to the close of the year. See **WAR OF THE NATIONS**.

URUGUAY. A South American republic bounded by Brazil, Argentina, and Bolivia. Capital, Montevideo.

AREA, POPULATION, ETC. Area, estimated at 72,153 square miles; population, Dec. 31, 1918, at 1,429,585, giving a density per square mile of 19.2. The population in 1908 was 1,042,686. The population of Montevideo, Jan. 30, 1919, was 361,452. Among other large cities are Paysandu and Salto, each with 24,000 inhabitants. The movement of population in 1918 was as follows: Births (exclusive of still births), 38,914; deaths, 20,009; marriages, 6843. In 1918, the immigrants at Montevideo numbered 180,687 and the emigrants, 177,254. Of the immigrants, 8779 were Spanish; 5459 Italian; 5023 Brazilian; 3241 English; 1411 French; and 1143 German. In 1919 there were 995 schools in operation, as compared with 985 in 1918. The pupils registered in 1919 numbered 106,905, as compared with 105,379 in 1918. The average attendance in 1919 was 79,749 pupils, as compared with 81,294 in 1918. The great majority of the inhabitants are Roman Catholic.

PRODUCTION. The chief products are wheat,

barley, oats, linseed, live-stock and wine. Tobacco and olives are also produced. There are several gold mines worked in the north and there are resources of silver, copper, lead, magnesium, and lignite. The acreage and yield of principal crops in 1918 and 1919 was as follows: Wheat, 849,472 acres and 187,523 metric tons; oats 85,744 acres and 18,701 metric tons; linseed, 52,275 acres and 12,660 metric tons; barley 5197 acres and 1578 metric tons. The industrial census of 1918 shows that there were in operation in the Republic 16,017 industrial and commercial establishments, with a capital of 134,383,782 pesos, and real-estate holdings amounting to 67,414,125 pesos.

COMMERCE. The total imports and exports for Uruguay during 1919 were 75,745,070 and 147,289,957 in gold pesos (worth \$1,034 each at par).

RAILWAYS. The three main lines of railway are the Central (984 miles), the Midland (501 miles), and the East Coast (71 miles). All of these were under British ownership. The lines of standard gauge open for traffic Jan. 1, 1917, had a mileage of 1654 of which 1060 were under state guarantee. The railway receipts for the fiscal year ending June 30, 1919, were 10,156,034 pesos as compared with 8,624,732 pesos during the preceding year.

GOVERNMENT. For an account of the constitution which came into force March 1, 1919, see preceding YEAR BOOK. The executive power is in a president and a national administrative council, and the legislative power in a parliament of two houses, namely the Senate and the Chamber of Representatives. President of the republic in 1920, Dr. Baltasar Brum (elected for the term March 1, 1919, to Feb. 28, 1923).

UTAH. POPULATION. According to the preliminary report of the census of 1920, there were 449,396 residents in the State, January 1, 1920, as compared with 373,351 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 25,664, an increase of 18.4 per cent since 1910. The following table was compiled from the estimates of the United States Department of Agriculture, for the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	24,000	521,000	\$782,000
	1919	18,000	324,000	488,000
Wheat	1920	280,000	5,366,000	8,210,000
	1919	294,000	8,542,000	7,438,000
Oats	1920	78,000	3,143,000	2,514,000
	1919	72,000	2,448,000	2,399,000
Hay	1920	588,000	1,416,000	17,955,000
	1919	541,000	1,085,000	22,307,000
Potatoes	1920	17,000	8,298,000	2,688,000
	1919	17,000	2,397,000	3,284,000

* Tons.

MINERAL PRODUCTION. The value of the gold, silver, copper, lead, and zinc produced from mines in Utah in 1920, according to the United States Geological Survey, was about \$46,000,000, a slight increase over that in 1919. The output of gold and copper decreased considerably and that of silver decreased slightly, but that of lead and zinc increased. The average prices of lead and zinc were higher than in 1919, but the prices of copper and silver were slightly lower. In general, production was retarded by the continued high costs of mining, milling, smelting, and refining, and in August the increased freight rate on ore and bullion added another handicap to mining. The mine production of gold decreased

from \$2,159,471 in 1919 to approximately \$1,949,000 in 1920, a decrease of nearly 10 per cent. Most of the gold was obtained from siliceous, copper, and lead ores that were treated at smelting plants. More than half the output of gold in the State was made in the Bingham district, about 30 per cent in the Tintic district, and the remainder in the Park City and other camps. The mine output of silver decreased from 11,649,961 ounces, valued at \$13,047,956, in 1919 to about 11,618,000 ounces, valued at \$12,664,000, in 1920. The average price for the year was about \$1.09 an ounce. The mine production of copper decreased from 124,061,807 pounds in 1919 to nearly 117,000,000 pounds in 1920. The average price was slightly less, and the value of the output decreased from \$23,075,496 to about \$19,991,000. The mine output of lead increased from 123,829,051 pounds in 1919 to about 134,000,000 pounds in 1920. The value of the output increased from \$6,562,940 to about \$10,939,000. There was an increase of about 35 per cent in the production of recoverable zinc. The mine output increased from 4,431,024 pounds in 1919 to about 6,000,000 pounds in 1920, and the value of the output increased from \$323,465 to about \$487,000. In 1920 the mines in Utah produced about 6,900,000 tons of ore, an increase from 6,745,423 tons in 1919. Of this total, the Bingham district produced about 6,400,000 tons, as compared with 6,086,379 tons in 1919. The estimated production of the district was 49,061 ounces of gold, 1,534,800 ounces of silver, 112,000,000 pounds of copper, 52,194,000 pounds of lead, and 1,853,000 pounds of recoverable zinc.

MANUFACTURES. The preliminary statement of the U. S. Bureau of the Census in respect to the State's manufactures showed a consistent increase at the census of 1919, as compared with that for 1914. In the order of their importance from a percentage standpoint, the increase for the several items rank as follows: Capital, 99.6 per cent; salaries, 99.3 per cent; wages, 97.2 per cent; value added by manufacture, 85.7 per cent; value of products, 80 per cent; cost of materials, 77.7 per cent; primary horsepower, 54.9 per cent; salaried employees, 40.7 per cent; wage earners, 35.5 per cent; proprietors and firm members, 9 per cent; and number of establishments, 4.5 per cent. The capital invested, as reported in 1919, showed a gain of \$71,523,000, or 99.6 per cent, over that in 1914. The average capital per establishment was approximately \$124,000 in 1919 and \$65,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$48,372,000 or 77.7 per cent. The average cost of materials per establishment in 1919 was approximately \$95,000, and in 1914 \$56,000. The value of products in 1919 showed an increase over that in 1914 of \$69,692,000, or 80 per cent. The average per establishment in 1919 was approximately \$135,000 and in 1914 \$79,000. The value added by manufacture in 1919 showed an increase over that in 1914 of \$21,320,000, or 85.7 per cent. The value added by manufacture in 1919 formed 29.5 per cent of the total value of products and in 1914, 28.6 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 909, or 40.7 per cent, while the average number of wage earners increased 4,933, or 35.5 per cent. A comparative summary for the state for 1914 and 1919 follows:

	Census—		Per cent. of increase, 1914-1919
	1919	1914	
Number of establishments	1,159	1,109	4.5
Persons engaged in manufactures	23,058	17,126	34.6
Proprietors and firm members	1,089	999	9.0
Salaried employees	3,142	2,283	40.7
Wage earners (average number)	27,064,000	13,696,000	97.6
Primary horsepower	\$143,366,000	\$71,843,000	99.6
Capital	92,236	59,536	54.9
Services	18,827	13,894	35.5
Salaries	5,668,000	2,844,000	99.3
Wages	21,396,000	10,852,000	97.2
Materials	110,605,000	62,283,000	77.7
Value of products	156,804,000	87,112,000	80.0
Value added by manufacture (value of products less cost of materials)	46,199,000	24,879,000	85.7

FINANCE. The auditor's balance, Nov. 30, 1919 was \$1,106,605; the gross receipts during the year were \$15,279,995; gross expenditures, \$14,771,827; auditor's balance, November 30, 1920, was \$1,614,772. The State's bonded indebtedness November 30, 1920 was \$8,410,000; total mortgage, bonded, and floating indebtedness, \$159,687,901.

ELECTION. The vote in the presidential election of 1920 was: Harding (Republican), 81,555; Cox (Democrat), 56,639; Christensen (Farmer-Labor), 4475; Debs (Socialist), 3159, as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 84,145; Hughes (Republican), 54,137; Benson (Socialist), 4460. The vote for governor was: Mabey (Republican), 83,518; Taylor (Democrat), 54,913; Locke (Socialist), 2843; Crosby (Farmer-Labor), 2300; and for United States Senator: Smoot (Republican), 82,566; Welling (Democrat), 56,280.

UTAH. UNIVERSITY OF. A co-educational State institution, at Salt Lake City, consisting of the schools of Arts and Sciences, Education, Mines and Engineering, Medicine, Law, Commerce and Finance and the Extension Division. It is conducted on the quarterly plan, and was founded in 1850. In the summer quarter of 1920, there were 924 resident students enrolled, of whom 240 were men and 684 women. For the fall session the enrolment was 1808 of whom 1049 were men and 759 women. There were 163 members in the faculty. The library contained 62,197 books and 22,315 pamphlets. The income for the year was estimated at \$400,000. A R. O. T. C. gun shed and a stable for the R. O. T. C. horses were erected on the campus, the government having maintained one of the units at the University. About one hundred ex-service men received vocational rehabilitation training at the institution. President, Andreas Widtsoe, Ph.D., LL.D.

VAIL, THEODORE N. Organizer of the telephone industry, died April 16. He was born in Carroll County, Ohio, July 18, 1845; went to school at Morristown, N. J.; studied medicine for two years and subsequently studied and entered the railway mail service in which he was General Superintendent in Washington from 1875 to 1878. Realizing the great possibilities of the telephone, he went into the telephone business in the latter year and devoted many years to the task of developing it. In this he was highly successful. He interested himself in the telephone and electric systems in various South American cities. In 1907, he became President of the American Telegraph and Telephone Company and he was president or director of many other corporations and important scientific and

learned bodies in the United States and Great Britain. It was said of him that he did more than any other man in the building up of the telephone business and in bringing the telegraph service into coöperation with the local and long-distance telephone services. When the Post Office Department assumed control of the wires as a war measure he became its chief adviser.

VALDERRAMA, CARLO. See MUSIC, Artists, Instrumentalists.

VALLE DE PAZ, EDGARDO DEL. Italian composer, died in Florence, April 5. He was born in Alexandria, Egypt, Oct. 28, 1861. After pianistic tours of Italy and Egypt he settled in Florence in 1890 as teacher at the Conservatory. From 1896-1914 he also was editor of *La Nuova Musica*. His compositions include an opera, *Oriana*, orchestral suites and chamber-music.

VALUE, BEVERLY REID. Civil engineer, died June 10. He was born at Montgomery, Ala., April 7, 1863. From 1886 to 1891 he was executive engineer of the new Croton dam in New York, and he was division engineer in New York in 1900-3, during the construction of the subways in New York City. He was also chief engineer in the development company which provided the plant on Niagara River in 1903-6 and was subsequently engaged in important constructions on the Susquehanna.

VANDERBILT, WILLIAM KISSAM. Capitalist, died July 23. He was born on Staten Island, Dec. 2, 1849. After an academic education and several years study at Geneva, Switzerland, he went into the railway service and from 1877 to 1883 he was second vice-president of the New York Central and Hudson River Railway. He became afterwards director of the New York Central and many other lines as well as official or director in numerous trade and social organizations. He was founder and president of the New Theatre and an organizer of several leading clubs in New York City.

VANDERBILT UNIVERSITY. A Methodist-Episcopal, co-educational institution at Nashville, Tenn., founded in 1873. There were 1161 students enrolled in 1920, and the faculty numbered 182. The productive funds of the institution amounted to \$3,400,000, and the income for the year was \$250,000. The library contained 78,000 volumes. Chancellor, J. H. Kirkland, LL.D., Ph.D.

VAN LAER, ALEXANDER THEOBALD. Artist, died March 12. He was born in Auburn, N. Y., Feb. 9, 1857; studied art in New York City at the Academy of Design and the Art Students' League and later in the Netherlands. He exhibited at the leading American exhibitions and received the bronze medal at the Charleston ex-

position. He was lecturer on art history for several years at Chautauqua and gave free lecture courses in the State of New York during twenty-four years.

VASSAR COLLEGE. A non-sectarian institution of the higher learning for women at Poughkeepsie, N. Y., founded in 1861. The enrolment for the fall of 1920 was 1089. The faculty numbered 144. The productive funds amounted to \$2,242,683 and the income for the year was \$852,508. There were 110,000 volumes in the library. President, Henry Noble MacCracken, Ph.D., LL.D.

VEAL. See LIVE STOCK

VEGETABLES. See HORTICULTURE.

VENEZUELA. A South American republic on the northern coast, bounded on the east by British Guiana and on the south by Colombia. Capital, Caracas.

AREA, POPULATION, ETC. The area is estimated at 398,594 square miles. The population was officially estimated Dec. 31, 1917 at 2,844,618; density, 7 per square mile. Important cities with their estimated population are as follows: Caracas, 86,880; Valencia, 54,387; and Maracaibo, about 50,000. Primary education is free and nominally compulsory. No later figures were available than those given in the preceding **YEAR BOOKS**.

PRODUCTION. The chief industry is the raising of coffee. The area under coffee plantations has been estimated at 250,000 acres. As to mineral production the asphalt resources are among the richest of the world, and are situated in the eastern and western division. Although Venezuela is probably a potentially large producer of oil, its petroleum production at the present time is small, due principally to the fact that as yet there has been but little actual development. At the end of the first half of 1920 the gross production of the country had reached the total of 162,829 metric tons (1 metric ton=2,204.6 pounds), all of which, with the exception of 151 metric tons, had been produced by one company, the Caribbean Petroleum company.

COMMERCE. Imports of foreign merchandise in Venezuela during 1918 were much less, both in weight and in value, than in the previous year. This was due to the difficulty in obtaining goods, as demand in Venezuela was as great as ever and the ability of the purchasing public to pay for articles desired was perhaps greater than at any previous time. Imports in 1918 and 1917 respectively were 114,964,886 and 77,244,950 bolivares; exports, 120,024,360 and 102,650,154 bolivares (1 bolivar equals \$0.193).

In 1917 imports from the United States were 70 per cent of the total value of all imports and 64.5 per cent of the total value of all imports excluding gold coin. In 1918 the United States supplied 64.6 per cent of the imports by weight and 60.2 per cent in value.

The balance of trade between the United States and Venezuela has been heavily in favor of the latter. For the 12 months ended June 30, 1919, the United States bought from this country produce to the value of \$19,732,709 and sold to it goods worth \$9,275,680.

RAILWAYS. The total length of the railways in 1920 was given at 1039 kilometers, distributed as follows: Guaira to Caracas Railway, 37; Great Railway of Venezuela, 183; Puerto Cabello to Valencia Railway, 55 kilometers; Bolivar Railway, 232; Great Tachira Railway, 120; Great

Railway of La Ceiba, 85; Central Railway of Venezuela, 73; Carenero Railway, 54; Guanta to Barcelona Railway, 36; Santa Barbara to El Vigia Railway, 60; La Vela to Coro Railway, 13; and other railways, 90 kilometers.

FINANCE. The following figures for the budget estimates were supplied by the Pan-American Union for the fiscal year ending June 30, 1921: Receipts, 59,612,000 bolivares; expenditures, 58,538,600 bolivares. The estimated revenues are as follows: Import duties, including parcel-post duties, 14,700,000 bolivares; cigarette taxes, 8,600,000 bolivares; revenues from liquors, 7,500,000 bolivares; from salt mines, 6,700,000 bolivares; stamp taxes, 6,500,000 bolivares; and other revenues, 15,612,000 bolivares. The estimated expenditures are: Department of interior, 12,166,529 bolivares; department of foreign relations, 1,927,203; department of the treasury, 16,889,808; department of war and marine, 11,101,521; department of fomento, 5,300,509; department of public works, 6,246,420; department of public instruction, 4,328,181; and other expenditures, 578,429 bolivares.

GOVERNMENT, ETC. The executive power is in the president who has a cabinet of 7 ministers (Foreign Affairs, Interior, Finance, Public Instruction, Public Works, Fomento, and War and Marine.) Legislative power is in a Congress of two houses, the senate and chamber of deputies. President in 1920, General Juan Vincente Gomez.

HISTORY. In October, it was reported that a revolt had broken out in Venezuela under the leadership of General Penaloza who was said to have entered the country from Colombia, and captured garrisons and seized large supplies of ammunition. The reports indicated that the government troops were on their way from Maracaibo into the disturbed region, which was in the less civilized portions of western Venezuela.

VENIZELLOS, ELEUTHERIOS. Prime Minister of Greece, regarded by many as the foremost of European statesmen; retired in 1920 and left the country on the return of ex-King Constantine. (See GREECE, *History*, and WAR OF THE NATIONS.) On August 12, an attempt to assassinate him was made at the Lyons railway station in Paris by two Greek officers reputed to be supporters of ex-King Constantine. He was slightly injured and recovered from his wounds soon afterwards.

VENKATASWETA, MAHARAJAH OF BOBBILI. British-Indian official and author, died Sept. 12. He was born, Aug. 28, 1862 and became president of the Imperial League at Madras. He was the first Indian member of the Madras executive council in 1910 and was prominent for his activities in public charitable work. He published several chronicles of Bobbili and also *Advice to the Indian Aristocracy*.

VERMONT. **POPULATION.** According to the preliminary report of the census of 1920, there were 352,428 residents in the State, January 1, 1920, as compared with 355,956 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 29,072, a falling off of 11.1 per cent since 1910. The following table was compiled from the estimates of the United States Department of Agriculture, for the years, 1919 and 1920:

Crop	Year	Acres	Produce Bu.	Value
Corn	1920	25,000	1,175,000	\$1,480,000
	1919	22,000	1,034,000	1,810,000
Oats	1920	81,000	2,885,000	2,126,000
	1919	85,000	2,550,000	2,295,000

Crop	Year	Acreage	Produc. Bu.	Value
Hay	1920	923,000	1,383,000	30,620,000
	1919	923,000	1,564,000	31,401,000
Potatoes	1920	27,000	3,510,000	4,888,000
	1919	25,000	2,500,000	3,925,000

c Tons.

MANUFACTURES. Preliminary figures published by the United States Bureau of the Census showed a consistent increase at the census of 1919, as compared with that for 1914. In the order of their importance from a percentage standpoint, the increases for the several items rank as follows: Cost of materials, 122.9 per cent; salaries, 118.7 per cent; value of products, 118.4 per cent; value added by manufacture, 112.9 per cent; wages, 83.3 per cent; capital, 67.8 per cent; salaried employees, 30.9 per cent; primary horsepower, 6.4 per cent; wage earners, 2.5 per cent; and number of establishments and proprietors and firm members, 1.1 per cent. The capital invested, as reported in 1919, showed a gain of \$54,173,000, or 67.8 per cent, over that in 1914. The average capital per establishment was approximately \$75,000 in 1919 and \$45,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$52,469,000 or 122.9 per cent. The average cost of materials per establishment in 1919 was approximately \$53,000, and in 1914 \$24,000. The value of products in 1919 showed an increase over that in 1914 of \$91,168,000, or 118.4 per cent. The average per establishment in 1919 was approximately \$94,000 and in 1914 \$43,000. The value added by manufacture in 1919 shows an increase over that in 1914 of \$38,699,000, or 112.9 per cent. The value added by manufacture in 1919 formed 43.4 per cent of the total value of products and in 1914, 44.5 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 842, or 30.9 per cent, while the average number of wage earners increased 830, or 2.5 per cent. A comparative summary for the state for 1914 and 1919 follows:

FINANCE. Cash on hand, July 1, 1919, \$557,-

	Census—		Per cent. of increase, 1914-1919
	1919	1914	
Number of establishments.....	1,792	1,772	1.1
Persons engaged in manufactures.....	38,908	37,217	4.5
Proprietors and firm members.....	1,806	1,787	1.1
Salaried employees.....	3,568	2,728	30.9
Wage earners (average number).....	83,534	82,704	2.5
Primary horsepower.....	185,107	173,937	6.4
Capital.....	\$134,020,000	\$79,847,000	67.8
Services.....	41,530,000	22,002,000	88.8
Salaries.....	7,404,000	3,385,000	118.7
Wages.....	34,126,000	18,617,000	83.3
Materials.....	95,175,000	42,706,000	122.9
Value of products.....	168,159,000	76,991,000	118.4
Value added by manufacture (value of products less cost of materials).....	72,984,000	34,285,000	112.9

716; receipts during the fiscal year including temporary loans and bonds issued (\$2,000,000), \$6,788,631; disbursements, \$5,381,226; cash on hand, June 30, 1920, \$1,965,122. Total indebtedness, June 30, 1920, \$2,907,737.

EDUCATION. The following figures are for June 30, 1920 with the exception of that for teachers which is for December, 1920: School enrollment, 61,785; average daily attendance, 50,186; number of teachers (elementary), 2120; total amount paid for salaries of teachers (elementary), \$1,313,157; total expenses for educational purposes, \$3,089,406.

CHARITIES AND CORRECTIONS. The State in-

stitutions with their situations are as follows: State Prison and House of Correction, Windsor; State Hospital for the Insane, Waterbury; Soldier's Home, Bennington; Vermont Industrial School, Vergennes; Brattleboro Retreat (for the insane), Brattleboro; State School for the Feeble-minded, Brandon.

ELECTION. The vote in the presidential election 1920 was: Harding (Republican), 68,212; Cox (Democrat), 20,919; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 40,250; Wilson (Democrat), 22,708. The vote for governor was: Hartness (Republican) 65,940; Martin (Democrat), 18,555; and for United States Senator: Dillingham (Republican), 70,541; Shaw (Democrat), 19,590.

OFFICERS. Governor, James Hartness; Lieutenant-Governor, Abram W. Foote; Secretary of State, Harry A. Black; Treasurer, Walter F. Scott; Auditor, Benjamin Gates; Attorney-General, Frank C. Archibald.

JUDICIARY. Supreme Court: Chief Justice, James H. Watson; Associate Justices, George M. Powers, William H. Taylor; Willard W. Miles; Leighton P. Slack.

VERMONT, UNIVERSITY OF. A co-educational State institution at Burlington, Vt., founded in 1791. In the summer school of 1920 there were 442 students enrolled and in the regular fall session, the enrolment was 617 men and 313 women. The faculty numbered 127, including 15 additions. There were 103,000 bound volumes and 40,000 pamphlets. President, Guy W. Bailey.

VETERINARY MEDICINE. The annual meeting of the American Veterinary Medical Association, the fifty-seventh, was held at Columbus, Ohio, August 23-27, at which Dr. Davis S. White of Columbus, Ohio, was elected President and Dr. M. Jacob of Knoxville, Tenn., Treasurer, Dr. N. S. Mayo of Chicago continuing as Secretary. At this meeting 314 new members were elected to membership. The next annual meeting will be held at Colorado Springs, Colo. The twenty-

fourth annual meeting of the Live-Stock Sanitary Association was held at Chicago, Ill., Nov. 29 to Dec. 1, at which Dr. W. F. Crewe of Bismarck, N. D., was elected President, and Dr. T. A. Burnett of Columbus, Ohio, Secretary.

VETERINARY EDUCATION. The educational standard has been gradually raised during the past few years and, commencing with the classes entering in the fall of 1919, a four years' high school education, or 14 units, was required for a veterinary college to be accredited and to have its graduates eligible for the civil service examination for veterinary positions in the Federal Bureau of Animal Industry.

There are now 16 accredited veterinary colleges in the United States of which 11 are State colleges with a veterinary department, 3 are private veterinary colleges and 2 are agricultural colleges that have raised their courses of study from two years to four years. There are also 9 foreign veterinary colleges on the accredited list, the College of Veterinary Science of the University of the Philippines having been added during the year. The combined attendance at all veterinary colleges in the United States was 1265, an increase of 151 over the preceding year. There were 371 graduates against 214 for the year preceding. The membership of the classes entering in the fall of 1919 was 352, against 264 for the preceding year.

NECROLOGY. The year saw the passing of several well-known veterinarians including Dr. Joseph Hughes, President of the Chicago Veterinary College, on April 24, at the age of 61; Dr. John F. Winchester of Lawrence, Mass., on April 27, at the age of 64; and Dr. Sidney F. Musselman, State veterinarian of Kentucky and President of the U. S. Livestock Sanitary Association, at Louisville on October 25, at the age of 47.

APPROPRIATIONS. The retrenchment policy of Congress led to a considerable reduction in the amounts appropriated for work by the United States Department of Agriculture. The sum appropriated for the hog cholera work was reduced to \$410,000, of which \$192,200 is to be used in field eradication. For cattle tick eradication the amount was reduced to \$681,160, and for dourine eradication work to \$65,200. For the tuberculosis campaign \$1,480,440 was appropriated, of which \$680,440 is for the payment of indemnities. The emergency appropriation of \$1,000,000 of the preceding year for use when needed in combating outbreaks of foot-and-mouth disease and other contagious affections was practically eliminated, only \$50,000 being made available.

BOVINE TUBERCULOSIS ERADICATION. Excellent progress was made in the eradication work with tuberculosis in cooperation with 45 States and the Territory of Hawaii. During the fiscal year ended June 30, 1920, there were 695,364 head of cattle tested, of which 28,616, or slightly more than 4 per cent, reacted and were removed. At the end of the fiscal year the number of accredited herds was approximately three times as large as on June 30 of the previous year. In addition to the fully accredited herds, 16,599 other herds containing 257,577 cattle passed the first official test, no reactors being found. Great public interest is being shown in this work and cattle owners are enthusiastically cooperating, the waiting list at times having included nearly 5,000 herds. A noteworthy development is the tendency to free from the disease areas containing many farms. During the year the counties of Clay in Mississippi, Island in Washington, and Clatsop in Oregon made complete tuberculosis tests of all cattle within their boundaries. The feasibility of not only freeing a region of tuberculosis but keeping it free is shown by the continuance of tuberculosis tests in the District of Columbia where but three reactors were found during the year among the 1173 head of cattle tested, and those three had been taken into the District on a health certificate. Investigations of tuberculosis among swine continue to show that they are infected principally by cattle.

In order to meet as fully as possible the demand for testing, the Federal Department of Agriculture has recognized under prescribed condition the intradermic in addition to the subcutaneous test and has obtained evidence also that the ophthalmic test, now frequently used as a check on the others, is dependable when applied by veterinarians skilled in its use.

CATTLE TICK ERADICATION. Areas aggregating 50,555 square miles, in six States formerly infested with cattle tick were released from Federal quarantine during the fiscal year ended June 30, making a total area of 509,084 square miles or 70 per cent of the area originally infested. Alabama again led the list, with 12,991 square miles placed in the unrestricted area, followed by Louisiana with 9299, Texas with 8847, Arkansas with 8130, Georgia with 6942, and Oklahoma with 4346. Sixty-two additional counties and 33 parts of counties were thus made available for the introduction of better bred cattle from tick-free States. During the fiscal year 44,813,070 inspections or dippings were made of cattle for the eradication of ticks, 35,045 dipping vats where cattle were dipped under Federal or State supervision having been in operation.

HOG CHOLERA. The records of the Meat Inspection Division of the Federal Department of Agriculture continue to show that, next to tuberculosis, hog cholera is the principal disease for which carcasses and parts were condemned. During the greater part of the year, 140 veterinarians from the Federal Bureau of Animal Industry devoted their time to the control of hog cholera, in cooperation with 34 States. Their work included the investigation of reported outbreaks, the administration of treatment, prevention of the disease from spreading, and stamping out the contagion by cleaning and disinfecting the premises, pens, and yards. Demonstrations were also conducted, veterinary practitioners were assisted in improving their technique, and general educational work was conducted.

DOURINE. In the Middle and Northwestern States, where dourine had gained a foothold, the infection is now known to exist in only two, Montana and South Dakota, and in the latter State only a few cases were found during the year. There still remains considerable work to be done in Montana in districts that are very difficult to cover. Satisfactory progress was made in Arizona and New Mexico where the disease has prevailed extensively, the greater part of the known infection in both States being within various Indian reservations. It is believed that, especially in New Mexico, the disease is under good control and that future progress should be fairly rapid. In the course of this work complement fixation tests were made of 18,468 samples of blood serum of which 257 gave positive reactions.

FOOT-AND-MOUTH DISEASE. This disease has become widespread in European countries as a result of conditions brought about by the war. England has been combatting it for nearly 2 years, Holland has been unable to keep it under control even with the application of most drastic measures, and discouraging reports have come from France, Italy, South America, and other foreign countries. In his annual report Dr. John R. Mohler, Chief of the Federal Bureau of Animal Industry, stated that every reasonable precaution is being taken to prevent its introduction into the United States, which has been free from it since the outbreak stamped out in 1916.

The danger of introduction has become greater due to its increased prevalence and virulence in Europe, since the virus may be carried in the bodies of animals, in hides, and in other live stock products. In his report Dr. Mohler called attention to the necessity for prompt action in eradicating centres of infection when introduced, and recommended that the sum of at least \$1,500,000 be made available for immediate use in case of need. When the immense value of the livestock of this country and the related interests involved are considered this seems a small amount to be made available as an insurance fund. As pointed out by Stewart Stockman, Chief Veterinarian, when freed from the disease in enzootic form Great Britain is only invaded when it is prevalent on the Continent, and the greater the prevalence the more frequent the invasions.

RINDERPEST OR CATTLE PLAGUE. This disease of cattle, sheep and goats, which is perhaps the most highly contagious and most fatal of the many diseases to which cattle are susceptible, and which has followed on the heels of European wars, has again been introduced into Western Europe. Early in July Brahman cattle from India on their way to South America were debarked at Antwerp. Later cattle shipped from America to replace the losses suffered on Belgian farms were placed in the paddocks where the zebu had been kept and from which they were shipped to their destination. As a result the disease developed at forty different points in several provinces in Belgium. This disease appeared in and spread through Poland, which country was unable to check it, and at the close of the year that country appealed to the various embassies in Warsaw for aid.

The disease, which is continually present in Asia and has within recent years become prevalent in Africa, causes enormous losses in infected herds of cattle and may even result in the almost complete extinction of animals in large areas. The first veterinary schools in France were established as a result of the great losses caused by it during the Napoleonic wars, when the disease spread over Germany and France. The losses caused by rinderpest in Germany during the 18th century are estimated at 30,000,000 cattle. The Transvaal lost 980,000 cattle in 1897, and in Cape Colony 1,300,000 animals died of the disease in the years 1897-1898. The importance of preventing its introduction into the United States cannot be too strongly emphasized.

SCABIES. In the course of the eradication work with sheep scabies 20,371,965 inspections were made and over 9,515,720 dippings in the field were supervised. In the work with cattle scabies 2,925,712 inspections were made and 1,657,418 dippings supervised. In Iowa particularly the prevalence of sheep scabies was greatly reduced, and in New Mexico excellent results were obtained with cattle scabies where the disease now exists to a slight extent only. There was an increased spread of sheep scabies in Oregon, and it is still present extensively in Southern Idaho. No progress was made toward eradication of cattle scabies in Kansas, while in the western parts of Nebraska and South Dakota and in Colorado, Wyoming, and Montana there was a considerable further spread of the infection.

SWAMP FEVER. Investigations by Scott led him to conclude that certain blood-sucking flies, *Stomoxys calcitrans* and *Tabanus septentrionalis* in particular, are capable of transmitting infec-

tious anæmia of horses, commonly known as swamp fever.

POISONOUS PLANTS. Among the investigations of poisonous plants reported upon were those by Marsh, Clawson, and Eggleston of *Baccharis pteronoides*, which is a source of losses of livestock in Arizona and New Mexico, of *Daubentonia longifolia*, popularly known as coffee bean, which poisons sheep and goats in Texas and the Gulf region, of *Astragalus tetrapterus* which is a source of losses of cattle in Utah and Nevada, and of *Asclepias galioides* or whorled milkweed which is poisonous to horses, sheep, and cattle in the Southwestern States. *Triglochin maritima*, or arrow grass, was found by Fleming and his associates in Nevada to poison sheep and cattle.

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VICTORIA. A state of the Commonwealth of Australia in the southeastern part of the continent; next to Tasmania the smallest of the Australian states. Area, 87,884 square miles; pop. estimated Jan. 1, 1919, 1,430,758, of which 928,360 were in the towns. Capital, Melbourne, which is also the temporary capital of the Commonwealth, with a population including the suburbs, Jan. 1, 1919, of 723,500. Other large cities with population estimates of that date are Ballarat, 39,970; Bendigo, 35,590; Geelong, 34,080. In 1918, the movement of population was: Births 31,601; deaths 15,177; marriages 9156. The immigration by sea in 1918 was 48,566 and the emigration 51,631, both exclusive of members of the Australian Expeditionary forces.

Executive power is vested in a governor who acts through a responsible ministry and legislative power in a parliament of two houses: the upper house with 34 members elected for 6 years and the lower house with 65 members elected for 3 years. Governor in 1920, Earl of Stradbroke; Prime Minister, S. H. W. Lawson.

VILNA. See WAR OF THE NATIONS.

VINCENT, JOHN HEYL. Bishop, died May 9. He was born in Tuscaloosa, Ala., February 3, 1832, and began to preach at the age of eighteen. After studying at the Wesleyan Institute at Newark, N. J., he travelled as a junior preacher of the Methodist Episcopal church. He officiated for some years in New Jersey and Illinois. After 1865 he established and edited various Sunday school publications. In 1878 he founded the Chautauqua Literary and Scientific Society of which he was the chancellor to the time of his death. He was well-known as a preacher and delivered sermons at Harvard, Yale, Cornell, Wellesley and other colleges. In 1900 he was made resident bishop in charge of the European work of the Methodist Episcopal church. He wrote books on the subject of Sunday school and church teaching, and the Chautauqua movement, and outline histories of England, Greece, etc.

VIOLIN, MISCHA. See MUSIC, Artists, Instrumentalists.

VIRGINIA. POPULATION. According to the preliminary report of the census of 1920, there were 2,309,187 residents in the state January 1, 1920, as compared with 2,061,612 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 186,011, an increase of 1.1 per cent since 1910. The following table was compiled from the estimates of the United States Department of Agriculture, for the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	1,670,000	50,100,000	\$50,100,000
	1919	1,670,000	46,760,000	79,024,000
Buckwheat.	1920	25,000	540,000	756,000
	1919	25,000	475,000	736,000
Oats	1920	220,000	4,818,000	3,903,000
	1919	240,000	5,280,000	5,280,000
Wheat	1920	914,000	11,425,000	20,565,000
	1919	1,060,000	12,508,000	28,018,000
Rye	1920	72,000	864,000	1,339,000
	1919	80,000	920,000	1,564,000
Tobacco	1920	243,000	177,390,000	42,574,000
	1919	221,000	125,970,000	59,710,000
Hay	1920	975,000	1,266,000	29,518,000
	1919	1,025,000	1,528,000	36,250,000
Peanuts	1920	138,000	4,416,000	6,006,000
	1919	139,000	5,699,000	15,558,000
Potatoes	1920	126,000	13,608,000	12,928,000
	1919	121,000	11,495,000	18,047,000
S't Potatoes	1920	36,000	4,032,000	3,830,000
	1919	38,000	4,750,000	7,362,000
S'g'm Sirup	1920	11,000	1,100,000	1,155,000
	1919	11,000	1,023,000	1,105,000
Cowpeas	1920	63,000	693,000	2,010,000
	1919	60,000	750,000	2,400,000
Cotton	1920	39,000	19,000	1,425,000
	1919	42,000	23,000	3,942,000
Soy Beans	1920	30,000	570,000	1,767,000
	1919	30,000	555,000	2,276,000

* Pounds. * Bales. * Tons. * Gallons.

FINANCE. Balances in the State Treasury, October 1, 1919, \$1,184,518; receipts during fiscal year ending September 30, 1920, \$18,442,325; disbursements, \$16,517,994; balance in treasury, October 1, 1920, \$3,108,849; true balance of the Commonwealth, October 1, 1920, \$455,415. Public debt, September 30, 1920, \$22,350,921, a reduction of \$561,295 during the fiscal year.

EDUCATION. The population of school age in 1920 was 680,924; number of public school buildings, 6532; number of pupils enrolled, 505,190; number of teachers, 14,271; average yearly salary of teachers, \$558. See EDUCATION IN THE UNITED STATES.

LEGISLATION. Among the measures passed in the regular session of the legislature were: Establishment of agricultural experiment station (see AGRICULTURAL EXPERIMENT STATIONS); commission to study the condition of the blind; extension of powers of building and loan associations with a view to relieving housing situation; provision for examination and certification of professional engineers, land-surveyors, and architects; provisions for vocational rehabilitation of employees injured in the course of their work; regulation of fire insurance; empowering State corporation commission to regulate delivery of water, light, heat, or power by public utility corporations; provision for control and prevention of venereal diseases; authorization of industrial loan associations for the purpose of making small loans to industrial classes at low rates of interest; permission to women to qualify and serve as deputy clerks in all courts of the State.

ELECTIONS. The vote in the presidential election of 1920 was: Cox (Democrat), 141,670; Harding (Republican), 87,458; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 102,824; Hughes (Republican), 49,358. The vote for United States Senator was: Glass (Democrat), 184,646; Pollard (Republican), 17,576.

VIRGINIA, UNIVERSITY OF. A non-sectarian institution of higher learning at Charlottesville, Va., founded in 1825. There were 1816 students enrolled for the summer session of 1920, and 1638 for the regular fall session. The faculty numbered 76. The total receipts for the year were \$752,142. There were about 120,300 volumes in the library. President, Edwin A. Alderman, LL.D.

VIRGIN ISLANDS. A group of small islands east of Porto Rico, part of which belong to the British colony, the Leeward Islands (q.v.) and part to the United States. The following information was supplied by the United States Bureau of Foreign and Domestic Commerce. Of the United States group, formerly known as the Danish West Indies, St. Croix, the largest, contains approximately 85 square miles, St. Thomas 30, and St. John 20 square miles. In addition to these there are about 50 smaller islands, most of them unnamed and uninhabited, comprising in all 84,781 acres, of which 69,892 acres are in farms. Because the islands of this archipelago were too numerous to be named individually, Columbus called them the "Virgins" after St. Ursula and her 11,000 virgins when he found the islands on his second voyage of discovery. The Bureau of the Census gave the total population of the Virgin Islands of the United States in 1917 as 26,051, of which 1992 or 7.4 per cent were white, 19,523 or about 80 per cent negroes, and the remainder, 4606, of mixed races. The island of St. Croix contained 14,901 people, St. Thomas 10,191, and St. John 959. The report of the Congressional Commission, January, 1920, stated that the population of Charlotte Amalie on the island of St. Thomas was about 9000, while Christiansted and Frederiksted, on St. Croix, contained respectively about 5000

and 3000 inhabitants; the total population of the islands being about 60 per cent urban and 40 per cent rural. The total number of families on the islands was reported as 9568 and the total number of dwellings 5858.

The trade of the Virgin Islands of the United States with the world was valued at \$4,196,037 in the calendar year 1919, as against \$3,141,775 in 1918, a gain of \$1,054,262, or 33 per cent. Exports showed a gain of \$670,179, from \$1,249,346 in 1918 to \$1,919,525 in 1919. Corresponding imports increased \$384,083, from \$1,892,429 to \$2,276,512. With this increase there was a drop of nearly 50 per cent in the balance of trade against the islands from \$643,083 in 1918 to \$356,987 in 1919. The major portion of this commerce was with the United States, the exports from this country increasing in value \$164,014, from \$1,640,103 to \$1,804,117; and imports from the islands into the States \$455,619, from \$1,137,501 in 1918 to \$1,593,120 in 1919. This is a growth in value of 40 per cent in imports and 10 per cent in exports over 1918. The proportionate increase is even more striking in the trade with foreign countries, imports from which rose 87 per cent, or \$22,069, from \$252,326 in 1918 to \$472,395 in 1919; and corresponding exports \$214,560, or 191 per cent, from \$111,845 to \$326,405. This showing is the more remarkable since the operation of the national prohibition act practically cut off in 1919 the former valuable trade in spirits, wines, and liquors for beverage purposes.

VITAL STATISTICS. The reports of the United States Public Health Service for 1920 contain a report recently completed of Birth Statistics and Infant Mortality for the year 1918. In the birth registration area the number of infants born alive was 1,363,649 or 24.4 per 1000 population. The death rate for the same area was 18.2 per 1000. The death rate for infants under 1 year old was 101 per 1000 live births. These figures are somewhat more unfavorable than those of 1917 in all three classes, especially in the death rate, which was 4.1 per 1000 higher than in 1917. In 1918 the infant mortality was 23 per cent higher in boy babies. The percentage of twin births was a little over 2. The average number of living children per family was 2.9; of all children born, 3.3 per family.

The principal causes of death in the registration area were as follows: influenza and pneumonia caused nearly a third of the total loss of life, equal to over 583 per 100,000 population. Organic disease of the heart destroyed 152.3 per 100,000, tuberculosis 149.1, violence 100, Bright's disease 96.9, malignant tumors 79.8, apoplexy 79.3, diarrhoeal diseases (the great majority in young children), 72.2. These 8 classifications are far more numerous than any others, all being over 70 per 100,000, while no other affection was over 30.

No other considerable statistics of births, deaths, marriages, etc., have been published and generally speaking the number of articles on Vital Statistics is relatively small and the data are of local interest or belated in point of time, while a number are of interest only to the professed statistician. Of those worthy of mention is one by Lublin and Whitney on the cost of tuberculosis. Lublin avails himself of the statistics of the Metropolitan Life Insurance Company and Whitney of those compiled by the National Tuberculosis Association. Tables of the

general expectation of life are contrasted with other tables from which the tuberculous subject was excluded. This method, the authors state, is by no means new. In the insurance material the expectation is reckoned from birth and in the public tables from the age of 20. The average loss in expectancy is computed for the whole community. This loss is equivalent to a loss to each inhabitant of 3½ years for white males, and of 2.6 years for white females. The loss for one year of life is assumed nominally as not less than \$100, and if we reckon that 2½ years of life are cut off from each individual the total loss to the latter would be at least \$250. Now if we multiply by 106,000,000, the supposed population of the United States, we reach the huge total of \$26,500,000,000. This does not include the cost of the illness of actual sufferers from the disease.

Lublin and Baker also publish a study of the mortality of the emigrant from Europe to the States of New York and Pennsylvania. These people are grouped as follows: Austrians (including Hungarians), Russians, Italians, Germans, British (excepting Irish) and Irish. The mortality of the native stock serves as a standard of comparison. The authors admit the incongruity of the idea in some respects; for example, the "Russians" comprise such incongruous material as the Poles who work in the Pennsylvania factories and the Jews of New York's East Side. But some striking figures are brought out: The emigrants have in general a much higher death rate than the natives and than their kin at home. In addition to the great fatal maladies the Pennsylvania immigrant is far more likely to be killed by industrial accidents than the native. The Irish exhibit a peculiar fatality, for in every one of the great mortal ailments they show a notably high death rate and lead all other groups.

The details are of minor interest to the general reader but some deserve mention. The Italian has a relatively low death rate from cancer and heart disease and contrary to the usual view does not have a specially high tuberculosis mortality. He is prone to death from pneumonia and accidents. The Austrians, too, show more immunity to tuberculosis than some of the other groups. The Russian of both types shows a high mortality from cancer and pneumonia. None of the preceding show a startling mortality from the degenerative diseases. The Germans and British seem to show no immunity to any one of the great causes of death and have high rates in tuberculosis, pneumonia, cancer, heart disease and Bright's disease. The same may be said, but even more strongly, of the Irish, who lead the list in all of these ailments.

In the *American Journal of Public Health* for January, 1921, Hemenway contributes an interesting paper on the legal aspect of birth certificates and of the great value of possessing at all times a certified copy. Such possession is indispensable at times to show citizenship, to obtain marriage licenses, to inherit property, to disprove criminal accusations, to establish age for marriage or voting, for eligibility to hold civil or military office, to establish nationality, to travel safely, to claim pensions, prove legitimacy, etc. Without one, a man may be imprisoned as an alien or have his property confiscated. If he marry a girl under legal age he is liable to the charge of rape or abduction; or if falsely accused of

technical assault her birth certificate may show that she had reached the age of consent. Birth certificates may be necessary in collecting insurance claims, damages for personal injuries, proving legality of marriage.

VOCATIONAL AGRICULTURAL EDUCATION. See AGRICULTURAL EDUCATION.

VOCATIONAL EDUCATION. See EDUCATION IN THE UNITED STATES.

VOCATIONAL REHABILITATION. See AGRICULTURAL EDUCATION.

VOLCANOES. During 1920 no great eruptions occurred in the well-known volcanic regions. Vesuvius was rather quiet though continuously active in a minor fashion. In Hawaii Halemauau continued to seethe on a magnificent scale but in the rather reassuring manner which is characteristic of the Hawaiian vents. In the Kau Desert region of Hawaii the great flow there continued to advance intermittently throughout the year. Numerous minor cones and craters were developed in connection with these two grand phenomena. Accompanying the frequent recurrences of activity in Hawaii were numerous earthquakes of minor type considered to be genetically related to the igneous activity.

In Mexico the two great volcanos Popocatepetl and Orizaba have again become active. The renewal of activity was synchronous with the great earthquakes that shook southern Mexico in the early part of the year. The new activity has as yet confined itself to the emission of great clouds of steam. Owing to the uninhabited character of the region immediately around the volcanoes the possibility of a great eruption is looked upon with little concern.

An event of great interest to volcanologists was the publication by C. N. Fenner, of the Geophysical Laboratory, Washington, of the results of his observations in the Valley of Ten Thousand Smokes which has been set aside by the national government as one of the national parks. According to Fenner the great eruption of Katmai in 1912 coated the country for hundreds of square miles with debris. The debris which fell on the valley walls was washed down the valley by the heavy rainfall leaving a residue clinging to the valley floor. The presence of the thousands of fumaroles in the valley Fenner explains by the intrusion of a sheet of lava just below the valley floor. He supports this conclusion by mention of the fact that all activity ceases at a short distance up the sides of the valley. The activity is wholly of a fumarolic character. More than 99 per cent of the emanations is water vapor. The next most common gas is HCl. HF and SO₂ are common constituents also. It is to be noted that the few anhydrous fumaroles are strongly acid, one containing large quantities of SO₂. Locally the surface of the valley is impregnated with HCl condensed from the vapors passing over it. The presence of HF was indicated by large deposits of amorphous silica around acid fumaroles. The presence of hydrofluoric acid was ascertained during the washing of the emanations captured from the fumaroles. The deposition of SiO₂ is believed to be the result of the decomposition of SiF₄ by water vapor at temperatures which have been observed to be above the critical temperature of water (375°C). As Moissan found SiO₂ to volatilize at 1200°C and as there is no evidence of such occurring in relation to these deposits, it is evident that they have not reached such a temperature.

A very curious phenomenon observed was the presence of blue green algae living at the edge of vents whence anomonia compounds were being emitted at a temperature of 100°C. They did not occur near vents from which ammonia compounds were not being evolved.

Numerous other substances have been formed from the emanations, notably sulphur, gypsum, apatite, corundum and orpiment, but in very small quantity.

According to Fenner the top of Katmai was not blown off but fell in. At present a crater several thousand feet in diameter exists, partly occupied by a lake in which rises an imperfect parasitic cone. There is now no evidence of activity within the mountain. This study of Katmai by Fenner is the most fruitful piece of research on volcanic activity of the year.

VOLHYNIA. A government of the former empire of Russia, situated in West Russia, east of Poland and Galicia, and forming part of the new state of Ukraine. Area, 27,699 square miles; pop. Jan. 31, 1915, 4,241,800, the majority of whom are Little Russians. Capital, Zhitomir, with a pre-war population estimated at 96,800.

VOLUNTEERS OF AMERICA. Founded in 1896, this organization conducts Christian, social, and philanthropic work throughout the United States. The organization is similar to the United States army, but the spirit is purely democratic. Reports for 1920 show that there were sixty-one principal homes or institutions where benevolence is being carried on. In connection with these there is a diversity of philanthropic departments, such as employment bureaus, wood-yards, industrial effort, coöperative stores, boys' clubs and trade classes, supplying of coal, distribution of milk and ice, women's sewing classes, reading-rooms, hospital nursing, summer excursions, fresh-air camps, distribution of clothing, providing of food for poor families and wives and children of prisoners. In connection with these homes and institutions during the past year 1,258,952 lodgings were provided, of which number 919,220 were paid for by work or outside employment, and 339,752 given free. Total meals furnished numbered 1,032,034, of which 720,460 were free. There were 115,155 families and individuals assisted and employment was provided for 84,615 persons. The attendance at indoor services was 926,036, while at the open-air services there were 2,654,558 persons, making a total of 3,590,594 persons during the year. In the Volunteer Hospital there were 11,294 day treatments in the wards; in the dispensary there were 12,343 new cases and 22,258 old cases treated, making a total of 34,601 surgical and medical treatments. There were 55,909 lodgings furnished young women in the homes during the year. The Volunteer Prison League aided over 100,000 men and enabled over 15,000 to secure work, who are making good. The work with girls in large cities has been very valuable, girls suddenly finding themselves forced to go to work have been provided for in the Working Girls' Homes. Also many children have been afforded a vacation from the city's streets to go to fresh-air camps in the country. Twenty years ago Mrs. Ballington Booth organized the Prison League which to-day is doing valuable work, not only for the prisoners after they are released, but in introducing reforms inside the prisons themselves. At Christmas and Thanksgiving time the Volunteers attempt to provide dinners

for the poor of the large cities, having distributed in 1920 many thousands of baskets of food.

During the war, the Volunteers rendered valuable service abroad, a summary of which will be found in the *NEW INTERNATIONAL YEAR BOOK* for 1918. The executive offices of the organization are at 34 West 28th Street, New York City. The president is Ballington Booth.

VON DANCKELMAN, ALEXANDER. See METEOROLOGY.

VON GANZ, FRIEDRICH. See PAINTING AND SCULPTURE.

VON GROTHUS, JEANNOT EMIL, FREIHERR. See GERMAN LITERATURE.

VON SCHIERBRAND. See SCHIERBRAND, VON.

VON SCHRODER, LEOPOLD. See GERMAN LITERATURE.

VORARLBERG. An Alpine province of the former Austro-Hungarian empire, constituting a crownland of Austria, with an area of 1005 square miles and a population (1910) of 145,408 of whom 132,908 were Austrian subjects. The German-speaking element made up 95.36 per cent of the population. Capital, Bregenz.

WAGNER, RICHARD. See MUSIC, *Opera*.

WALES. A division of the United Kingdom, lying west of central England with the Irish Sea on the north and the Bristol Channel on the South. Area, 7466 square miles; pop. (1911) 2,025,202. See GREAT BRITAIN.

WALLACHIA. The central and western division of Rumania with Transylvania and Moldavia on the north, Serbia on the west, Bulgaria on the south and the Dobrudja on the east. Area 29,916 square miles; population Jan. 1, 1913, 4,716,291. The largest city is Bucharest, the capital of Rumania, with a population in 1917, of 308,987.

WANTAGE, HARRIET JONES LOYD, Lady. British peeress, died near Wantage, England, Aug. 9. She was the daughter of Lord Overstone, a millionaire banker, one of the leading financiers of the mid-Victorian period. She married in 1858 Col. Lloyd Lindsay, who was a member of Parliament from 1865 to 1885, when he entered the House of Lords as Lord Wantage. She was active in founding and administering the English Red Cross Society with which she was closely associated during all its early activities as well as during the late war. With her husband she added to the important art collections of the family.

WAR CAMP COMMUNITY SERVICE. This organization was discontinued in 1919, and a new organization, called the Community Service, was organized. During the war, War Camp Community Service did valuable work, and this work is being carried on on a peace basis by the new organization. See COMMUNITY SERVICE; SOCIAL HYGIENE.

WARD, BERNARD. (BISHOP OF BRENTWOOD.) British prelate and writer, died Jan. 21. He was born at Herts, England, Feb. 4, 1857, and was educated at St. Edmund's College, Old Hall, and at Oscott College, Birmingham. In 1882 he was ordained priest by Cardinal Manning and subsequently was master at St. Edmund's and at Oscott. He was celebrated for his prominent part in the Oxford Movement, being known at that time under the nickname of "Ideal" Ward. He became Roman Catholic Canon of Westminster in 1903. Among his writings may be mentioned:

A Commentary on St. Luke's Gospel (1899); *The Dawn of the Catholic Revival* (1909); *The Eve of Catholic Emancipation* (1912); and the *Sequel to Catholic Emancipation* (1915).

WARD, MRS. HUMPHRY. British novelist, died in London, March 24. She was born in 1851 at Hobart in Tasmania, the daughter of Thomas Arnold, who was the second son of Dr. Arnold of Rugby. She was also the niece of Matthew Arnold. In her youth she lived with her family at Oxford where she made the friendship of Mark Pattison, the rector of Lincoln College and formed many other acquaintances among the leaders of political and theological thought as well as in the field of literature. Among those whose influence she felt or with whom she was in some way associated may be mentioned, George Eliot, Taine, Lewes, Jowett, T. H. Green, J. R. Green, and Bishop Stubbs. In 1872, she married Mr. T. Humphry Ward who was then a fellow of Brasenose and she lived with her husband at Oxford until 1880 when they settled in London. Her literary career began with the publication of a novel called *Milly and Olly* which, however, gave no promise of her future success in fiction. She had made a thorough study of Spanish and had served in the University as examiner in Spanish and also had pursued historical studies. The results of her research appeared in many articles that she contributed to the *Dictionary of Christian Biography*. Her great success was won by the novel *Robert Elsmere* in 1888 which was read everywhere by English-speaking people. As a study of religious doubt and a criticism of the orthodox faith, it stirred up hostility, but was admired by the most eminent men of the time. Of her subsequent novels which were very numerous, the most popular were *The History of David Grieve* and *Marcella*. Her concern with religious questions was largely the result of her relations with the philosophical and theological celebrities of the day, showing plainly the influence of such great personalities as Newman, Pusey, Huxley, Darwin, Ruskin, Kingsley, Green, Matthew Arnold and others. The mental life of the hero of *Robert Elsmere* was perhaps suggested by the experience of her own father who was the victim of religious doubts and had more than once changed his faith. The philosophical and religious disputes which were going on during her youth left a permanent stamp upon her writings and the spirit of her earlier work was that of a gradual liberation through free inquiry from the restrictions of the older faith. She applied to religion the radicalism of her time and her attitude may be summed up in the words of her character in *Helbeck of Bannisdale* who criticized a certain dogma by saying "It may be Christian, but it is not sense." Public service, especially for the improvement of the condition of the poor and of the working classes absorbed even more of her attention than literature during the latter part of her life. She was interested in innumerable plans for social reform and took an active part in the most important movements of her time. She was opposed, however, to woman suffrage and led the fight against it; but she acknowledged her defeat with a good grace and accepted the appointment as one of the first women magistrates. Among other benevolent movements in which she took a prominent part was the establishment of children's play centres. She won gratitude in England and in America for her work during the war.

Among other writings of Mrs. Ward may be mentioned the novels *Sir George Treasady* (1896); *Eleanor* (1900, subsequently dramatized); *Lady Rose's Daughter* (1903); *The Marriage of William Ashe* (1905); *Fenwick's Career* (1906); *Diana Mallory* (1908); *The Case of Richard Meynell* (1911); *The Coryston Family* (1913); *Delia Blanchflower* (1914); *Lady Connie* (1916). She also wrote a great variety of articles on political and other topics for the magazines. Mrs. Humphry Ward's work was admired by critics rather for its description of contemporary social and political conditions than for its literary qualities. It showed evidence of keen observation and wide reading; but it did not possess the finer literary characteristics of the best novels of her time. She enjoyed a great reputation among her cultivated contemporaries, but she never attained any marked individuality of expression, and the element of style as it is found in the great Victorians of her time was completely lacking.

WAR OF THE NATIONS. SUMMARY. Before discussing in detail the various situations and events growing out of the war, the main features of the year may be briefly outlined as follows: After the completion of the Treaty in 1919, the Peace Conference continued its session having to deal with a number of serious questions including those of the Adriatic and Fiume, Albania, Thrace, Hungary, Turkey, etc. It finally closed its sessions January 21, having provided as permanent bodies to deal with these other problems a council of ambassadors and a council of premiers. The former was to control the execution of the peace treaties and to deal with ordinary questions in respect to the peace, while the latter was to consider all larger questions of international policy and to formulate plans in regard to urgent matters of importance. The council of premiers came to be better known under the title of Supreme Council, and is so termed throughout this article. Formal peace with Germany was concluded January 10, with the exchange of the ratifications of the Treaty of Versailles on the part of Germany on the one hand and representatives of fourteen Allied and Associated Powers, namely, France, Great Britain, Italy, Japan, Belgium, Bolivia, Brazil, Guatemala, Panama, Peru, Poland, Siam, Czechoslovakia and Uruguay. A protocol was signed at the same time embodying Germany's agreement to turn over to the Allies in reparation for the sinking of the German ships at Scapa Flow of 275,000 tons of maritime equipment, including floating docks, dredges, etc.

In the first part of the year attention was centered on the meetings at London, Boulogne, Hythe, San Remo, Brussels and Spa. The outstanding feature of all international adjustments during the year was the failure of the United States to ratify the treaties or to join the League of Nations. The practical result of this was to throw additional responsibility on the other powers concerned for the working out of the problems of reconstruction. After the ratification of The Treaty of Versailles, Great Britain at once resumed diplomatic relations with Germany. The degree to which Germany should be admitted into the councils of the Powers was thenceforth a subject of discussion among the former Allies and in general France opposed this policy while Great Britain and Italy favored it. Among the early events of

1920 may be mentioned the handing of the city of Danzig over to the Allied powers; the placing of the Saar Valley under the administration of a commission appointed by the League of Nations; the carrying out of the plebiscite in North Schleswig in February and March (see DENMARK); the placing of the other districts subject to plebiscite, Allenstein, Marienwerder and Upper Silesia, under the control of inter-allied commissions; and especially the difficulties occasioned by the Polish situation. As soon as the territorial clauses of the Treaty came into force, Poland assumed sovereignty over a large area in the east of Germany. The attitude of Poland from that time on gave great concern to public opinion in certain of the Allied countries, especially Great Britain and the United States, while in France the most extreme claims of Poland were in general supported. The course pursued by Poland and its results are discussed in paragraphs below and under POLAND, RUSSIA, LITHUANIA, etc. Early in the year also arose the question of the war criminals. The submission of the list of criminals whose surrender was demanded by the Allies caused great indignation in Germany and the Allies agreed to radical modifications of the demands. As to the surrender of the German emperor, it was found impossible to carry out the clauses of the Treaty owing to the attitude of the Dutch who took their stand strictly on the principles of international law. The two chief points of discussion in respect to the execution of the Treaty with Germany were disarmament and reparations, which were continuously debated in all the countries concerned down to the last day of the year. In February the period within which the German army was to be reduced to 150,000 men was extended from March 31 to July 10. In March occurred the Knapp counter-revolution on the part of the reactionary elements in Germany (see GERMANY, *History*), which although overthrown diminished the authority of the Ebert government, and especially that of the minister of defense, Noske. The authorities found it necessary to reinforce troops in the Ruhr district where the Communists had brought about a situation of virtual civil war. As this was contrary to the treaty they were obliged to ask the permission of the Allies, but they acted before the permission was granted. Then occurred the French occupation of the Ruhr district (see below and under GERMANY, *History*). At the San Remo conference in April it was agreed that the French troops should be withdrawn as soon as the German troops in the Ruhr Valley had been reduced to the required limit. At the conference of Spa in July, Germans were for the first time admitted to the discussions. As a result of the various conferences, the Allies agreed to extend further the period for the reduction of the German army to January 1.

The Austrian treaty was formally ratified July 16, 1920. The serious aspect of the situation in Austria was the movement of union with Germany, (see AUSTRIA). The Hungarian treaty was signed June 4 in Hungary. The main features of the year in Hungary were the continued success of the reactionary parties under the government of Admiral Horthy and the bad relations with the neighboring states chiefly on account of the race questions. The Adriatic problem and especially the Fiume

difficulty continued to trouble the statesmen almost down to the end of the year. Discussions of the Turkish treaty began in Paris in January and continued in London in February. The Supreme Council announced February 16 its decision that the Sultan's government should remain at Constantinople. The leading fact in the Turkish situation was the attitude of the Nationalist Turks who under Mustapha Kemal Pasha had set up an independent government at Angora and who practically ruled the country, the Sultan's authority being without force in Anatolia. (See below and under **TURKEY**.) The terms of the treaty were settled at the conference of San Remo in April and the treaty was given to the Turkish delegates, May 1, to be signed within a month. At the conference of San Remo also, it was decided that France should have the mandate for Syria and Great Britain for Mesopotamia and Palestine, thus rejecting the claims of Emir Feisal, the Arab nationalist. The relation of Greece to the Allies was fundamentally changed toward the end of the year by the downfall of M. Venizelos and the recall of the former king Constantine. As to Russia, the interventionist policy had been abandoned but there was still great difference of opinion among certain elements in each of the countries of the Allies and between France on the one hand and Great Britain and Italy on the other. The early part of the year saw the rise and fall of a new anti-Bolshevist leader, General Wrangel (see **RUSSIA**), but the most important contest of the Bolsheviks was with Poland who after being threatened with a conquest suddenly regained the upper hand, drove out the invaders and formed a peace satisfactory to her own interests. (See below and also the article **POLAND**.) Other aspects of the Bolshevik danger were the Bolshevik advance in the east and their success as against Armenia and the other newly formed border republics of Georgia and Azerbaijan; and the fear on the part of Great Britain of a Bolshevik advance toward India and of Bolshevik propaganda among the Indian natives. The absorbing topic of the year in connection with the Soviet government was the question of resumption of trade relations between it and the countries of the Allies. The attitude of governments and parties on the subject is discussed below and in the articles on the countries concerned.

The League of the Nations was formed immediately after the ratification of the treaty and the first meeting was held in Paris January 16. This was followed by meetings in Paris, Brussels, and San Sebastian, in the course of which the League was fully organized. In November and December the first session of the Assembly of the League was held at Geneva. The activities of the League during the year are described in the paragraphs immediately following.

LEAGUE OF NATIONS: FIRST SIX MONTHS. The executive council of the League of Nations consisting of nine representatives, one each from the five great and four small Powers, (see article **LEAGUE OF NATIONS**) held six meetings down to the middle of June. At the first meeting, which as noted above was held at Paris, January 16, the first business transacted was the appointment of the commission of the Saar Basin frontier. The second meeting was held in London, February 11. The rules of procedure of the council was adopted; Switzerland

was admitted; the Saar Basin government commission was appointed; Sir Reginald Tower was named High Commissioner of Danzig; the League assumed the charge of protecting racial minorities in Poland; the following institutes were planned: Permanent Court of International Justice; International Health Bureau; machinery for insuring freedom of communication and transit; and a call was issued for the meeting of an International Finance Conference.

The third meeting was held in Paris, March 13. Its main business was the approval of plans for sending a League commission of inquiry into Russia and for measures of prevention against typhus in Poland. The sending of a commission to Russia was accepted in accordance with Mr. Balfour's proposals. A telegram was sent to the Soviet government saying that the League had decided to send a commission to Russia to make impartial inquiries and asking the Soviet authorities to take measures to assure its complete liberty and safety. At first this met with no response and it was reported in April that the Soviet government did not approve the sending of such a commission, but later the reply was received. This accepted the proposal in substance, but refused to receive as delegates, the representatives of any nations aiding or encouraging the Poles or Ukrainians in their campaign against Soviet Russia. The Council drafted a reply in which the answer of the Soviet government was interpreted as a refusal and which urged that government to reconsider its decision.

The fourth session was held also at Paris on April 9. It received from the Supreme Council a request that the League should take a mandate for Armenia. The Council of the League decided that acceptance of a mandate for the minorities in the Turkish Empire was within its province but should be postponed until the Turkish treaty was drafted: and that it would assume only a supervision of Armenia, not having the necessary military and financial means of administering the country directly. Meanwhile other countries had voted to join the League. Persia had accepted the invitation to become a member early in the year. Holland voted to join on February 20; Sweden, March 4; Norway, March 5; and Switzerland, March 5, subject to a referendum later. By April 6th, the neutral countries of South and Central America including Argentina, Paraguay, Chile, Salvador and Venezuela, had also joined.

The fifth meeting was held in Rome, May 14-16. Thirty-six states were represented and the following subjects were discussed: Plans for the accession of new states, the convoking of the assembly, the organization of the permanent secretariat, the framing of the budget and its apportionment, the formation of the Permanent Armament Commission, the appointment of the International Statistics Commission, and action on various matters including transportation and communications, central European relief, typhus in Poland, repatriation of ex-enemy prisoners in Siberia, discussion of the report of the Washington Labor Conference, and registration and publication of new treaties between members of the League. Among the other subjects discussed was the means of securing Germany's fulfillment of article 213 of the treaty, according to which she was to submit to the investigation of all her military provisions by the League. The council accepted the principle that it should

hold itself responsible for Germany's fulfillment. It was decided that the first Assembly of the League should be called by President Wilson and meet at Geneva in the autumn.

The sixth meeting was held in London, June 14, being called especially for the purpose of hearing Persia's appeal against Bolshevik aggression. This was regarded by many as the first great test case. In the latter part of May, the Persian foreign minister had protested to the League against the Bolshevik occupation of Enzeli on the Caspian sea. In the French press it was argued that owing to the British protectorate of Persia it was England's duty and not that of the League to attend to this matter and in certain French quarters it was charged that Lloyd George was trying to secure from the League a recognition of the Anglo-Persian treaty or of the Soviet government or both. This was the spirit of articles in the French *Temps* and it was in line with the policy of the leading French journals throughout the year in all matters pertaining to British foreign affairs.

In the meanwhile measures had been taken for the organization of a permanent Court of International Justice in accordance with the decision of the meeting of February 11.

An organizing committee had been appointed at that meeting consisting of the following countries: United States, Argentina, Belgium, Brazil, France, Great Britain, Holland, Italy, Jugo-Slavia, Japan, Norway, Spain. The representative of the United States was Mr. Elihu Root. Switzerland confirmed her decision to enter the League by her referendum May 15-16. Applications for membership were made by Iceland, San Marino, Luxemburg, and the new republic of Georgia. At the end of May the new states of Esthonia, Ukraina, and Finland consented to join. The republic of Haiti joined on June 2 and on that date the only states eligible for admission who were not members were the United States, China, Costa Rica, and Honduras. As to admission of enemy states, it was uncertain, but it had been given out that Germany would be allowed representation at the International Financial Conference to be held in Brussels in July. It was reported that a League of Nations Union in Germany had been organized and had a membership in May of more than nine millions. The decisions of the League indicated a line of policy which had a most important bearing on the old question of executing the treaty and consequently on the question of America's entry into the League. This was its tendency to cut loose from the policies of the Peace Conference. Friends of the League argued that it was the duty of all men to support it even if they believed that the Treaty was unjust and inapplicable. A secretariat had been organized to serve as a permanent trained international staff for gathering information, preparing plans, etc. Early in the year it was in operation having a membership of 100 men and headquarters in London. It was divided into sections according to the nature of its work as follows: Legal; mandates; international; health; transit; international bureaus; political administrative commissions; economic; public information; financial. The work of this body showed that it was adverse to the principle that the League should be the agency for enforcing the Treaty and in all its plans and

in the nature of its machinery it proceeded upon that theory. According to this view the League could not assume responsibility for such matters as the Reparation Commission, the trial of war criminals or the establishment of title in conquered countries and it had also a tendency to evade other actions for the enforcement of the treaty. M. Raymond Poincaré who was expounding in detail during the last months of the year, the French point of view in respect to the Treaty made a similar comment upon the work of the League, saying that at the instance of the President, M. Bourgeois, the League had dismissed from its programme everything that pertained to the treaty of peace and that the conferences therefore had turned out to be simply a great Court of Miracles where nations came to display their infirmities and sufferings.

Other features of the League's work during the year were measures for the adjustment of differences between Finland and Sweden over the Aland Islands; arrangement for repatriation of war prisoners in Silesia; intervention on behalf of peace between Lithuania and Poland; and organization of the financial conference at Brussels, and the execution of measures proposed by it; measures of general humanitarianism such as the campaign against typhus, above mentioned, the control of the opium trade, and the measures taken against the white slave traffic; attempts to secure mediation in Armenia and approaches by this end to the United States, Brazil and Spain; rejection of the German demand for another plebiscite in Eupen and Malmédy, and the definite assignment of these districts to Belgium; creation of a permanent committee of mandates for the administration of the former German colonies; acceptance of the responsibility for the protection of racial minorities; registration of 69 treaties, in conformity with the stipulation of the Treaty of Versailles. Some of the more important of these are discussed in the following paragraphs.

THE LEAGUE'S POLICY. Illustrations of the League's course in dealing with international questions were afforded at important sessions in Paris in October. Among the questions presented was the administration of the basin of the Saar. The report on this subject indicated that the status of functionaries had been worked out in a liberal and democratic spirit and that the government commission was effectively at work. According to the French this was a vindication of their course and a reply to the German attempt to stir up an agitation against the French in the Saar. The League of Nations approved without reservation the French administration there.

Another feature of the session was the assignment of Eupen and Malmédy to Belgium pursuant to Article XXXIV of the Treaty. The Council decided that since out of 63,000 inhabitants there were only 271 protests against the return of this region to Belgium and since the popular will had been carried out in spirit of the Treaty the session was justified. The Council definitely decided in favor of the transfer of this district to Belgium.

Another important problem was that of the Aland Islands. This, unlike the other questions, did not pertain merely to the execution of the Treaty but to the settlement of a dispute between sovereign nations. Thus the League of Nations was called upon to deal with the sort of

question for the solution of which it had been created. Finland maintained that the Åland question was not international but purely a Finnish question and therefore outside of the jurisdiction of the League. The Council, however, declared that it was competent to deal with it. The matter was left to a future decision, special investigators having been appointed.

Still more important was the conflict between Poland and Lithuania. The latter had refused to recognize as binding the decision of the Supreme Council of Dec. 8, 1919, fixing the eastern limits of Poland and claimed a different line, namely that traced in accordance with the treaty of July 12, 1920 with the Russian Soviet government. Here again the Council did not at once go into the question but awaited the result of certain direct negotiations that were going on between the contestants. Nevertheless, it prevailed upon the two states to accept provisionally a line between the zones of occupation which the troops of neither power should overstep. The essential point in the question was the fact that a part of Lithuanian territory, namely, the region of Grodno was still occupied by the Bolshevik troops.

The future status of Armenia was discussed in the meeting of October 21. According to the spirit of the Peace Conference and also of the Supreme Council of the Allies, Armenia was to be directed in the first stages of its independence by some Power acting as mandatory. The burden of the mandate was so serious that no state was willing to undertake it and the Supreme Council, March 12, proposed to the League of Nations that it should cooperate with it in the protection of the future state. It decided against this on April 10, as noted above. In its reply to the Supreme Council, April 11, the League said that the entire civilized world must support the complete emancipation of Armenia and that to this end it was necessary for some civilized state to accept a mandate under the protection of the League. Armenia would be satisfied with this solution which, of course, required that aid be given to her in the freeing of the country and the guarding of its frontiers. Financial assistance was also necessary. Under the plan proposed by the League the burden of these measures would be divided among the different states.

On April 26 the Supreme Council informed the Council of the League that it had appealed to President Wilson. On May 31 it was learned that the United States Senate had refused the mandate. Meanwhile Armenia had become an independent state by virtue of the Treaty of Sèvres, August 6, 1919, and had applied for admission to the League. The Council of the League came to no further decision in respect to Armenia and it was proposed that the question of financial aid be submitted to the approaching Assembly of the League, fixed for November 15.

As to the policy of the League it had been effective on its administrative side and as above indicated the results were considerable. Its accomplishments during the first year of its existence included, first its organization. This comprised a secretariat of three hundred officials, two hundred of them being of a clerical or subordinate nature and the remaining hundred being responsible authorities. Three annexes were added to it organized on the model of the International Bureau of Labor and comprising

finance, hygiene and transit. Each of these during the interval had held its first meeting. The Bureau of International Labor in the absence of a strong central organization of the League assumed an independent existence and proceeded to expend on its activities an amount equaling two-thirds of all other expenses of the League, the League being responsible for its budget. The expenditures of the League exceeded anticipation and at the session of the Council at San Sebastian it was brought out that the League subsisted chiefly on bank loans. As to the other measures undertaken by the League before the Geneva meeting, the results were in the main negative, that is to say, the questions taken up were abandoned or the policies approved were left unexecuted. There was one exception to this, and that was the question of the Åland Islands. The proposal to send a mission of inquiry into Russia had failed on account of the refusal of the Soviets to receive it. The League was unable to take any steps toward an active policy in respect to Armenia. When the Persians demanded aid against the Bolsheviks, the League went no further than to discuss the subject with the appellants. And although the League arbitrated the Polish-Lithuanian difference, it had no means of applying its decision. The League also encountered a check in its social and philanthropic activities. The return of the prisoners of war, for example, was not accomplished except for a very small percentage; the organization of the campaign against typhus in Poland had reached only the point of an appeal for funds; and the Brussels conference called to discover the causes of the economic world crisis and to recommend remedies had not done more than to proclaim a number of general truths. In the domain of practical and immediate policies of less importance the League had shown successful results. For example, it has intervened in the question of international transit and the regulation of passports with the result that many difficulties and some causes of strike throughout the world were removed. It reduced the so-called white slave traffic and it secured better means of protecting public health. Down to the time of the Geneva Assembly, the League had shown no ability to carry out the principal political aim for which it had been founded. In regard to a certain class of matters destined to come before it, it seemed very likely to take useful action—such matters for example as the unification of legislation in the different countries in respect to patents, commercial and literary property, conditions of naturalization, frauds in the sale of food, etc. It was felt after the American elections and the affirmation of Mr. Harding that the United States could not enter into a league which had the power to bind its members in the exercise of force without consulting them, that the tendency would be not to extend the powers of the League, but to reduce them, for it was believed that the League could not endure successfully unless it obtained the support of America. As to one of the chief questions before it for example, that of general disarmament, it remained in suspense because the United States was not represented.

THE GENEVA ASSEMBLY. On November 15, the Assembly of the League of the Nations opened its sessions at Geneva with representatives from forty-one nations. M. Motta, president of the Swiss delegation, delivered the opening address



Photo by Paul Thompson, N. Y.

DAVID LLOYD GEORGE



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PAUL HYMANS

President of the League of Nations



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ALEXANDRE MILLERAND

President of France



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GIOVANNI GIOLITTI

President of the Italian Ministry

EUROPEAN STATESMEN PROMINENT IN 1920

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M. Paul Hymans, head of the Belgian delegations, was elected permanent president. In the course of the speeches frequent references were made to President Wilson, who was described as the "spiritual father of the League," and much regret was expressed for the absence of the United States.

The question of publicity for the proceedings of the commissions came up soon after the meeting of the Assembly. There were to be six of these commissions to which would be referred definite questions including questions of justice, finance, mandates, reduction of armaments, etc. A motion was made by Lord Robert Cecil that all meetings of the commissions should be made public unless it could be shown that there were good reasons to the contrary. The motion was defeated, but it was proposed that a report should be made of the proceedings. The most important event in the earlier sessions was the resolution to send an armed force into Lithuania to maintain order during the plebiscite which was to be held in Vilna and the surrounding region. As is recounted elsewhere the Polish general, Zeligowski, seized Vilna after the Bolsheviks had evacuated. Thereupon, Lithuania protested to the League and the Council of the League agreed to a plebiscite. The sending of troops to maintain order is authorized by Article XI of the Covenant, whereby it was provided that in danger of war, the League might take such action as it saw fit. The matter was significant in its bearing on the question of maintaining peace in Europe by armed forces. Within the first few sessions of the Assembly it was made plain that Germany was not to be a member. This was attributed to her failure to apply. It was said that had she applied for membership, she would have received the necessary two-thirds majority. Her motive in not applying appeared to be the fear that in so doing she would increase the feeling against her and delay the appeasement of Europe, in view of the French opposition to her entry. The session of the Assembly on November 22 was marked by an important discussion of the Armenian question, in which France and Great Britain took the leading parts. These two Powers had followed a conflicting policy in Asia Minor (see below), the French favoring negotiations with the Nationalist Turkish leader, Mustapha Kemal, on behalf of Armenia, while the British, so long as Venizelos was in power had wished to suppress Kemal's activities. Upon the downfall of Venizelos, the French, assuming that the Greeks would no longer play an aggressive part in Asia Minor, believed the time had come for approaching Kemal, and this would lead naturally to the revision of the treaty with Turkey. Lord Robert Cecil brought on the debate by the introduction of a resolution to the effect that a commission of six members be chosen to consider what steps should be taken toward ending the war between Kemal and the Armenians. In the discussion that followed, the British delegate pointed out the difficulties in the way, saying Kemal was merely an outlaw and beyond the reach of the power of the League. The French delegate demanded that the League should do something practical and introduced an alternative resolution that the Council of the League should meet at once and select a Power to undertake arbitration between Kemal and

the Armenians. In the course of this debate, reference was several times made to the League's lack of military power and regret was expressed amidst the applause of the whole body that the League had not been backed up by force. M. Viviani evidently wishing to put his country on record as not responsible for the League's lack of power to enforce its decisions, said that the French peace delegation headed by Senator Bourgeois went to the Hotel Crillon during the Peace Conference and asked President Wilson that the League be given an army and a permanent general staff. If France had been heard, he said, the League would not be in a position of impotence and could send an armed force to save Armenia.

A request was addressed to President Wilson by the president of the Council of the League that he should use his good offices in mediation for the purpose of ending hostilities in Armenia and it was accepted by President Wilson, November 30. He said that while the invitation to accept the mandate for Armenia had been rejected and while he was not authorized to offer any military aid for the relief of Armenia, he was willing to mediate personally through a representative in order to bring peace in Armenia. Upon President Wilson's acceptance, the names of the Prime Minister of Spain, Señor Dato and the Foreign Minister of Brazil, Senhor Marquez, were presented to the Council as associates of President Wilson in the mediation. The Council voted in favor of them and all three arbitrators were subsequently notified.

The Assembly decided on November 26 to give the control of the mandate commission to the non-mandatory Powers. This was opposed by British delegates. The commission of the League Assembly having to do with mandates appointed a permanent mandate committee of nine members, five of them being from the non-mandate holding states. This mandate committee was to receive reports from states holding mandates and transmit them to the Council which in turn would submit them to the Assembly. The committee was to have the power of hearing complaints and to give opinions which, however, would not be binding.

At the beginning of December the committee on the admission of new states unanimously decided that Article X of the Covenant of the League did not guarantee the territorial integrity of any member of the League and that all it did was to condemn external aggression on the territorial integrity and political independence of a member. The decision was of importance in view of the vast amount of discussion in the United States based on the contrary assumption.

On December 15, the Assembly decided to admit Austria as a member of the League. She was the first of the Central Powers to be admitted. On the same day the Assembly chose the four elective members of the Council: Spain, Brazil, Belgium and China. On December 16, the following states were admitted: Belgium, Costa Rica, Finland, and Luxemburg, bringing the number of members to forty-six.

At the session of December 14, the Assembly voted to establish an international commission which should provide financial aid to the European nations whose credit had been destroyed or diminished by the war. A plan had been elaborated during several months and was put

into final shape by the economic section appointed early in December. It was provided that nations desiring financial credit should notify the commission what assets they possessed, that the commission should then estimate their value and authorize the governments in question to issue gold bonds. It was understood that the plan had received the approval of the leading European bankers. The text of the draft approved by the Council was in part as follows:

"The government of a country desiring to participate shall notify the commission what specific assets it proposes to assign as security for commercial credits to be granted by the nationals of exporting countries. The commission, after an examination of these assets, shall determine the gold value of the credit which it would approve against the security of these assets. The participating Government will then be authorized to issue bonds to a gold value fixed by the commission.

"The assigned assets are to be administered by the participating Government or by the commission as a majority of the League of Nations may determine on the proposal of the commission. Nevertheless, in cases where the administration of assigned assets is by the participating Government, the commission at any time may—and in case of default shall—require the participating Government to transfer the administration of the assets to itself. The participating Governments have the right of appeal to the Council against this requirement, and the decision of the Council shall be binding."

"The countries exposed by the weakness of their credit to onerous conditions and exacting demands will thus secure an impartial tribunal to protect them. They will find in it support when dealing with creditors and will be relieved of any fear of unfair political pressure, which would not, as in the case of debt councils, threaten to encroach on their sovereign rights. These sovereign rights would remain under the protection of the Council of the League. Being thus able without misgiving to offer to the lenders adequate guarantees, they should be in a position to borrow on more reasonable terms than would otherwise be the case."

The Assembly closed its sessions on the evening of December 18. The last session was the occasion of some sharp discussion in respect to the powers of the Council. Lord Robert Cecil and Mr. Balfour, the English delegates took opposing ground as to the policy of the League in respect to mandates and as to the relation between the Council and the League. There was much criticism, especially on the part of the representatives of the smaller nations, of the wide powers assumed by the Council. It was the controlling authority in nearly every matter, except the admission of members and the appropriation of money. A resolution had been introduced declaring that the states holding mandates should not exploit the territories concerned or raise troops in them. Mr. Balfour contended that the Council retained the entire freedom of action in this respect. There was also much objection to the secrecy of its proceedings. Lord Cecil recommended that the great Powers should make their policy in respect to mandates known. He consistently demanded publicity. He persisted in this demand believing that the time of the old secret diplomacy had passed. Mr. Balfour declared that the Council was the responsible body under the Covenant and that its members could not admit any restriction on its freedom of action. This issue had divided the Assembly during its entire session. It was charged that the great Powers were simply carrying out selfish national policies in the manner of the old diplomacy. The refusal to publish their proceedings gave offence to a large number of members.

INTERNATIONAL COURT OF JUSTICE. In October the secretary of the League of Nations published the plan for the permanent International Court of Justice, as developed by the committee of

jurists in sessions held at The Hague, June 16–July 24th. The chief interest of the plan was its manner of solving the problem which had caused the failure in 1907, namely, the question of the composition of the court. According to the plan the judges of the court were to be elected by the council and the Assembly of the League from a list of names designated by the national groups of the permanent court of arbitration instituted at The Hague by the conferences of 1899 and 1907. Its permanence was insured by the requirement that it should hold a session each year and, at the option of its president, might be convoked in extraordinary session when circumstances required. The powers of the court were indicated by the following provisions. In a difference arising between the states which cannot be resolved through diplomatic channels and which does not pertain to another jurisdiction, the complainant may submit it to the court of international justice. The court has jurisdiction over first, the interpretation of the Treaty; second, all questions of international legislation; third, any violation of international obligations; fourth, the nature and extent of the reparation for such violation; fifth, the interpretation of sentences pronounced by the court. It also would take cognizance of all differences of any kind that might be submitted to it as the result of a general agreement or a specific understanding between the parties concerned. If a contest arose between the parties in regard to the competence of the court in respect to a difference between them the court was to decide. It was also to give its advice in respect to any international question even if it did not have relation to a difference between the nations. The language of the court was to be French although another language might be authorized at the request of the parties in litigation. The committee of the League's plan was presented to the Assembly at Geneva, December 13, and unanimously adopted. It differed from the plan of Mr. Root and his associates in some important particulars. For example, the committee of the League in conformity with the decision of the Council at Brussels believed it impossible to secure the consent of the requisite number of League members to a plan which permitted an offended nation to cite another nation before the Court. This provision was replaced by one which gave the nations the right to consent or refuse obligatory arbitration.

SAAR BASIN. The commission of the Saar Basin was appointed by the Council of the League February 13, and assumed its duties February 26. Its president was M. Rault of France, other members were two representatives of Belgium, one of Denmark, and one of Canada. The Saar Basin, it will be remembered, comprises the mining region which for fifteen years under the terms of the Treaty was to be exploited in the interest of France for the payment of the damage done to her industrial regions. The function of the governing commission was to make sure that the new arrangement caused no unnecessary friction with the natives. It announced that officials would thenceforth be chosen, so far as possible, from among the population and no longer be appointed by the Prussian, Bavarian, or German governments, and that above all, the administration of justice was to be in the hands of the natives. Religious freedom was assured and provisions for the material welfare of the inhabitants promised. Subsequent conferences

were held with representatives of the natives with a view to a policy suited to their interests and wishes, and a programme was finally laid down embodying among other points the immediate end of military rule, the prompt insuring of food supplies, the freeing of travel from incumbrances, the removal of the censorship on letters, and the granting of freedom of the press and of assembly and association as soon as possible.

GERMAN WAR CRIMINALS. On February 7, the Supreme Council demanded of the German government the extradition of 890 German subjects accused of crime in connection with the war. The main part of this list was made up of names presented by France and Belgium. Great Britain listed ninety-seven; Poland, fifty-one; Rumania, forty-one; Italy, twenty-nine; and Jugo-Slavia, four; while all the rest were almost evenly divided between France and Belgium. Neither Japan, nor the United States asked for any extraditions. Here, as in the case of the German ex-emperor, the Allies completely backed down and after some hesitation accepted the German government's proposal of January 5, that a German federal court should try the accused at Leipzig. In March, forty-six names were presented by the Allied justice committee, being selected from those against whom the evidence seemed the strongest. The Allies were to have the right to order a re-trial or to re-try the cases themselves if they disagreed with the verdict. The subject was debated in the German parliament and in the course of the discussion it was made known that the government had prepared a list of war criminals among the Allies, but had decided not to publish the names.

THE EXTRADITION OF THE EX-KAISER. On January 15, the Supreme Council demanded of the Netherlands that the former Kaiser should be surrendered for trial in accordance with the Treaty. The Dutch government refused on the principle of the national law of asylum for political fugitives. The Council again applied to the Dutch government, February 14, giving it to be understood, however, that the Allies would not insist upon the actual surrender of the ex-emperor, provided that the Dutch government would intern him and be responsible for his acts. The Dutch government replied March 5, that it would take the necessary means of preventing the ex-emperor from endangering the peace of the world. This proposal was accepted by the Powers on March 31.

SAN REMO CONFERENCE. Several important meetings of the Supreme Council took place during the year. The first of these was the conference at San Remo, April 18. Here the main feature was the manifest division in the policy of the Allies. The deviation between French and British aims was now evident. French troops had occupied German towns to the east of Maience in order to insure the withdrawal of German troops from the Ruhr district. There was a general feeling in France among political leaders that London did not mean to enforce the Treaty and there had been many notes interchanged between the two governments before the conference met. The French insisted upon strict enforcement of the Treaty; the Italians favored revision; and the British pursued a policy of adaptation to the changing needs. It was decided as noted above that

French troops should be withdrawn from the Ruhr Valley as soon as the German forces there had been reduced to the required limit. After a warm discussion the conference agreed upon a note to Germany insisting upon disarmament and the execution of the Treaty, but it denied any intention to annex German territory and invited Germany to meet the delegates of the Allies at the conference which was to be held at Spa. Other questions before the conference were those of the Turkish settlement and the Russian and Adriatic problems. In regard to the Turkish settlement, the conference agreed upon the principles which were embodied in the treaty with Turkey described in another paragraph. It agreed also that Great Britain should be the mandatory power for Mesopotamia and Palestine and France for Syria, and it offered the Armenian mandate to the United States, after the League of Nations had declared that it would be unable to accept it. It promised the Zionists that civil rule should replace the military administration in Palestine. In regard to the Russian question, it instructed the executive of the Supreme Economic Council to enter into negotiations with the Soviet delegate M. Krassin in respect to commercial relations. It decided that the Adriatic question should be left to the two nations concerned in the dispute.

So far as the area of her acquisitions was concerned, Great Britain was far in the lead of all the others, having added a new empire to her possessions, while France and Italy were confined to the coast. The British control extended over western Asia including all the country between Cairo and Calcutta and between the Caspian Sea and the Persian Gulf, not to mention the fact that she was in possession of Constantinople. This was undoubtedly the greatest change in favor of one Power in that part of the world since it was overrun by the Ottoman Turks when they built up their empire. The point is important in view of the Anglophobia manifest in France, in certain quarters in the United States, and throughout many countries, and the common assertion that Great Britain had gained the lion's share in the spoils of the war. Other territories whose status had to be determined were Armenia and Anatolia. While the Armenians were scattered over the vast region extending from the Black Sea to the Mediterranean and from Sivas in Anatolia to Kars in what had been Russian land till the revolution, they constituted only a minority in the greater part of this region; and it did not seem practical to try and secure Armenian supremacy over any such enormous region.

The decision to invite the Germans to meet the Allied representatives at Spa caused much discussion. It was argued that peace could not be restored until Germany as well as Russia was brought into the concert of nations again. It was agreed at San Remo that the Treaty should be enforced but that this should be done in a spirit of fairness and for the purpose of restoration. It was important that Germany should know how much she was to pay and this was important also for France and Belgium. But there was not a strong enough government in Germany to carry out a plan for the payment of the reparations. Throughout the country there was a defiant or evasive spirit and a tendency to terrify the Allies by threats of Bolshevism or to soften them by appeals to sympathy. Little

was heard in 1920 of demands that Germany should confess her guilt, surrender her war criminals, or make a definite renunciation of her old policies—that is to say these matters were not discussed among practical public men though they figured conspicuously enough in the writings of journalists and literary men. The conference of Spa was looked forward to as a step toward reconciliation and reconstruction.

HYTHE CONFERENCES. The second conference of the prime ministers was held at Hythe, England, May 15. Its object was to draw up a plan for a conference that should be held at Spa, Belgium, to which the German Chancellor would be invited. Its general conclusions were: That the Treaty should be enforced in all respects, especially its disarmament provisions; that a lump sum should be fixed for the German reparation by experts who would also determine the method of payment; that the payment of Allied debts to Great Britain should be dependent on the payment by Germany of her indemnity. This agreement in respect to fixing definitely the amount to be paid by Germany was reached only after a long contest in which the French prime minister, M. Millerand had stood out against it.

Another conference was held in Hythe June 20 attended by the French, British and Greek prime ministers, for the discussion of the Turkish question, and decided to give Greece a free hand in dealing with the Turkish Nationalists. It was merely preliminary, however, to the Boulogne meeting on the following day.

BOULOGNE CONFERENCE. A conference was held June 21 at Boulogne attended by France, Great Britain, Greece, Italy, Japan and Belgium. Its main result was an agreement to approve the war against the Turkish Nationalists. The question of the German indemnity gave rise to a long discussion, but without definite result except that it was decided to turn the matter over for settlement to a financial conference to meet at Brussels, July 2.

SPA CONFERENCE. It was agreed at the conference of Spa between the Allied and German representatives that the monthly delivery required from the Germans should be reduced from 3,500,000 to 2,000,000 tons. On the one hand advances were to be made to Germany in proportion to her deliveries in order that she might feed her miners; on the other hand the Ruhr district and other coal basins were to be occupied for three months if the promised coal were not received.

GERMAN DISARMAMENT. As noted in the preceding YEAR BOOK there were repeated charges that Germany was failing to execute the terms of the Treaty in respect to disarmament and was under various pretexts maintaining a large military force. At the beginning of 1920 the statements were repeated and became more precise. According to one report circulated in the leading French and British journals, the total German armed forces were 1,062,000, divided into five branches and this was said to be a conservative estimate. Of these, 400,000 were attributed to the *Reichswehr* which was formed out of voluntary units during the Spartacide revolution in the opening months of 1919 and another 400,000 was attributed to the Civic Guards or *Eimwohnerwehr*. These or similar assertions were repeated at short intervals down to the last day of the year. The French complained that distant nations like England and the United

States unlike France not being in immediate danger, Germany was taking advantage of laxity in enforcing the terms of the Treaty to place herself on a strong military footing. At the meetings of the Supreme Council at Boulogne and Spa, Germany was ordered to abolish her enforced military service and to reduce the army to 150,000 men by October 1, 1920 and to 100,000 men by January 1, 1921; to dissolve the so-called *Sicherheitspolizei*, a sort of military police created by the Berlin government against the Bolsheviks both in and outside Germany and numbering about 300,000; and to disarm the civil population including so-called popular guards or *Eimwohnerwehr* comprising about 300,000 men. The first two of these measures were promptly carried out. On July 1, the suppression of compulsory military service was voted and volunteer recruiting was prescribed for the next ten years. But the measures adopted for the organization, according to the French critics, provided ingeniously for an increase of the numbers by a clandestine method admitting of great elasticity, and described in detail in the French press: A report was made by Marshal Foch December 31, toward the end of the failure of Germany to carry out the obligations in the matter of disarmament, and the French government addressed a note to Berlin dealing in detail with Germany's failure to observe the requirements of the Spa protocol of July 9 in respect to disarming the police and delivering surplus war material and guns. The French note asserted that German laws were inconsistent with the military clauses of the Treaty, that the commission of control had not been able to verify the German contention that the army had been reduced to 100,000, and that the commission had encountered resistance to its orders for the destruction of air-craft material. The German government in reply attempted to disprove these statements except in regard to certain points where exact conformity to the terms imposed had been impossible. It declared that Germany did not refuse to disarm the home guards of East Prussia and Bavaria, but that conditions there did not permit so prompt an execution of the terms as in other parts of the country. It asserted that the security police existed no longer; that the German government had obeyed substantially the demands of the control commission; that it had no intention of evading the obligation it had undertaken at Spa; that the existence of self-defense organizations was not inconsistent with Article 177 of the Treaty, etc.

REPARATIONS. The quarrel over the amount of reparations, the fixing of that amount in advance, and the question whether Germany was seeking to evade or unable to meet her obligation continued without interruption throughout the year. After the Boulogne conference the most definite plan before the public was one that provided for payments of 3,000,000,000 gold marks annually for the first five years, payment of 6,000,000,000 annually the next five years, and payments of 7,000,000,000 annually the next thirty-two years, a total of 269,000,000,000 marks in forty-two years, it being calculated that at 8 per cent interest, with 1 per cent amortization, this would be equivalent to 85,000,000,000 marks gold, current value. France, receiving 55 per cent of the indemnity, would thus get about 47,000,000,000 marks gold, about 60,000,000,000 gold francs at present value, or 148,000,000,000 gold marks, if she waited

forty-two years to get it all. It was the plan at that time that France could borrow in England and America on her share by means of Reparation Commission bonds guaranteed by Germany, England, France and Belgium, bearing 8 or 9 per cent interest, and that thus she would be in a position to meet her current reconstruction expenditures. Much bitterness was displayed by French writers against British laxity in the matter of the reparations. The opposing points of view are presented in the paragraphs on Anglo-French Friction below. Early in November it was learned that an arrangement had at length been reached between the French and British governments in respect to procedure in the matter of reparations. In France this was regarded as a diplomatic victory. It was in fact a compromise whereby the French government agreed to meet the representatives of the other Allies and also the representatives of Germany and to consider the question of fixing definitely the amount of the indemnity. The British demanded that German experts should be admitted to the discussion. The terms of the accord were published on November 12 as follows: (1) The meeting at Brussels of technical experts of the allies along with technical experts of Germany. (2) A conference of Allied Ministers at Geneva after the plebiscite of Upper Silesia not later than the middle of February, 1921 to discuss in its entirety the question of reparations; Germans to participate in an advisory capacity. (3) The Reparations Committee to proceed then to the fixing of the total amount in the matter of payment of the indemnity from Germany and to make a report to the Powers in regard to Germany's ability to pay. (4) The Supreme Council to meet and fix penalties in case of non-execution.

RUSSIA AND THE OTHER POWERS. The policy known as that of the "sanitary cordon" employed against Russia in 1919, was definitely abandoned at the close of the year, and its complete failure was implied in the decision announced, January 16, by the Supreme Council, that the Russian blockade would be raised. The Council announced at this time also, that trade relations would be established, but denied that it intended to recognize the Soviet government. The Russian question came up at the conference of San Remo but without any definite result. The Italian prime minister, Nitti, urged that trade should be resumed but while this was favored in general terms, each nation was left to its own discretion in the matter and it met with little approval on the part of the French, who declined to admit the Bolsheviks' contention that the debt of the former Russian government should be excluded from the present government's obligations, which meant a repudiation of some 26,000,000,000 francs due to France. At Copenhagen an agreement was signed with certain international commercial groups looking to a prompt resumption of trade (April 23). In this matter the Russian representative, Krassin, was active. His subsequent efforts to re-open trade with Sweden failed as did also the efforts of the Moscow government to arouse American interest in the matter. Meanwhile British, German, French, and Italian prisoners continued to be sent back to their respective countries. The Japanese signed a protocol April 29, with the Russian officials in Siberia, but still continued in control of Vladivostok and the military group

in Siberia was accused of arbitrary acts by the members of the inter-Allied railway commission. France continued consistently anti-Bolshevist. On August 11 France recognized the government of General Wrangel as the government *de facto* of Russia. The comment of French government organs emphasized the importance of this new government; and said that General Wrangel had taken measures to prove that he had been freely accepted by the populace, that he was governing well and defending their liberties. He further, according to French opinion was the representative of popular rule whereas the Soviet government was, as it declared itself, simply a dictatorship. France was ready to recognize any government in Russia, no matter what its form on condition that it was really representative of the nation, and not of a mere faction. In addition to these reasons for recognizing Wrangel, another one of great force in France was his recognition of the obligations of the government to pay off the debts incurred under the old régime, including the large debt to France. This attitude brought France in opposition to the policy of the British government. Many of the British papers declared that the French recognition of Wrangel was entirely opposed to British ideas and was a menace to the relations of France and Great Britain. Italy and Great Britain inclined to a policy of moderation and the resumption of trade. For an account of the Krassin mission and the negotiations on this subject see GREAT BRITAIN. On November 19 it was learned that the British government intended to carry out the arrangement resulting from these negotiations (June 30 to October 6). The resumption of trade according to the British demands was to rest upon the mutual cessation of hostilities. The conditions included the following points: The Soviet government was to refrain from hostile actions and propaganda directed against British institutions, and from military action or propaganda to encourage the peoples of Asia in opposition to British interests; immediate release of British prisoners in Russia; and recognition by the Soviet government of the principle of liability to pay compensation to private citizens who had supplied goods or services to Russia. There was opposition in a portion of the press to the principles of this agreement, especially to a clause which proposed that the British government should not place any embargo on gold securities or commodities shipped from Russia in payment of imports. The long correspondence on the subject was made public at this time.

RUSSO-ESTHONIAN TREATY. The first treaty which the Russian Soviet government made with the new Baltic states was that signed at Dorpat February 2 with Esthonia after negotiations lasting about a month. The principal points in it were, after declaring that the war should cease from the date at which the treaty became effective: The determination of the frontier by a line defined in detail, a joint commission being appointed for the delimitation; provision for a neutral military zone January 1, 1921; obligation on the part of both signers to prohibit the maintenance of any hostile armies or their passage through the territory or the transportation of munitions from enemies; renunciation by both of all claims for military expenditures or war losses; an agreement to an exchange of prisoners.

POLAND. For an account of Poland's repulse of the Soviet armies and the subsequent Treaty, see POLAND, *History*. The main question before the American people in 1920 in respect to Poland was whether or not her recent policy had been imperialistic. An enormous body of writing centered about this subject and it was difficult to arrive at any impartial conclusion. President Wilson, when he vetoed the proposed peace by resolution on May 26, criticised the arrangement therein proposed because among other reasons, it had nothing to say about the re-establishment of an independent Polish state. The championship of Poland had been one of the principles in his proclamation as a basis for ending the war long before the celebrated fourteen points were in evidence. As to American interest, it was argued that the success or failure of Poland was of the utmost importance to the United States for the most important financial interests were involved in it. After the war all of Poland's frontiers were in the hands of the enemy. The government of M. Paderewski and Gen. Pilsudski, criticised though it had been for its imperialistic tendencies, had to contend with these dangers. It succeeded in coming to terms with the Lithuanians and putting an end to the German danger; in turning the Ukrainians from enemies into friends; and in agreeing to a friendly settlement of the difficulties with the Czechs. As a consequence there remained only the Bolshevik front which had to be defended. In midsummer the military situation of Poland according to the United States government was not dangerous. The city of Kiev was still held firmly by the Ukrainians and Poles, and Minsk and Vilna were still in Polish hands. According to reports of June 1, after heavy fighting, the Reds had been defeated by the Poles near Borisov with a loss of many prisoners and the line of the Beresina river had been re-taken. In the north, on the other hand, the Reds had driven back the Polish lines to some extent and a drive against Vilna was threatened. It was reported at that time that Poland with her ally, the Ukraine, was secure in the possession of about three-fourths of her ancient kingdom and that about half the territory was outside the provisional eastern boundary fixed for Poland by the Supreme Council at the Peace Conference.

This last point is of great importance in the whole discussion of the subject because it was the ground on which the critics of Poland charged that she was pursuing a policy of imperialism, and called the Polish operations in this region a war of conquest. It was repeatedly urged throughout the year that with the Polish forces several hundred miles beyond the line fixed by the Treaty it was absurd to speak of Poland as fighting a war of self-defense. These charges were as frequently denied or dismissed. The justification for Poland's seizing so much territory in White Russia was presented by her partisans as follows: In November 1918, when Poland regained her freedom, the Bolsheviks were nearly at the gates of Warsaw. When the Peace Treaty was signed in June 1919, the Bolsheviks had been driven several hundred kilometers to the east. In December, 1919, Poland's eastern boundary was fixed provisionally. Meanwhile the Poles had continued to drive back the Bolsheviks and were holding a strategic line just to the east of Minsk or 250 kilometers

east of the new boundary. This region was still well within the ancient boundaries of the kingdom of Poland. The Poles had accomplished this by themselves and in spite of the withdrawal of America and England from northern Russia. When the Allies through the Supreme Council invited them to fall back they naturally objected on the ground that this request was unaccompanied by any provision for preventing the enemy from following them up. Thus the Poles were technically in the position of invaders, but as a matter of fact, they had delivered this region from the Bolsheviks; they were feeding and protecting the inhabitants; and they were trying to restore the country to a productive state. Furthermore, according to their point of view, they had not conquered the inhabitants, for these inhabitants were their former subjects. Nor did they claim this territory, either as a result of their occupation or because of racial affinity. They merely claimed the right of self-determination for the inhabitants. General Pilsudski and the Diet had disavowed any intent to annex forcibly this region. It was further argued that the fixing of the provisional eastern line practically left the nation free to push as much further east as it was able. When Poland signed the Treaty, it left her eastern boundary to be determined later by the Allied and associate Powers. The Polish demands in midsummer were as follows: the retirement of the Reds beyond her 1772 boundaries, that is to say, the boundaries that existed before Poland's first partition. The Peace Treaty and the later proclamation concerning the boundary left Poland with an area little more than one-third of the ancient kingdom, that is to say, of Poland as it existed before 1772, and it excluded some 8,000,000 Poles from Poland. The Poles were dissatisfied with this arrangement. They held that besides excluding these 8,000,000 Poles, the provisional boundary was a line unsuited by nature to military defense. In short, they held that they had been left in a bad position with only vague hopes of the support of the League of Nations. They thereupon determined by their own efforts to check the Red advance and to strengthen Poland in every way. They had united with Latvia against the German Baltic troops in the operations around Riga and they had joined the Polish and Lettish frontiers against the Bolsheviks. Those who sympathized with Poland's course throughout all this believed that all criticism of it was due to such influences as German propaganda, Soviet propaganda, the interest of Great Britain in resuming trade with the Soviet government, and in general, ignorance of the true facts, and acceptance of reports colored by the self-interest of those who circulated them. They argued that the Germans naturally were alarmed by Polish success against Russia because they looked to Russia for their own salvation. They regarded the provisional eastern boundary of Poland as a rampart for the protection of the Bolsheviks and they expected to penetrate and exploit Russia by means of it. Berlin press agencies were flooding central Europe with publications attacking Poland and predicting Polish disaster.

It will be recalled that under the treaty a corridor was cut through German land from Poland to the port of Danzig, which port was made a free city, contrary to the desire of the Poles, who wished to control it themselves. The

Poles also hoped on the basis of the fourteen points that the several million Poles living in White Russia would be allowed to vote for annexation to Poland, but the Supreme Council did not give orders for such a plebiscite. According to the Poles, White Russia was far more Polish than Russian owing to political relations, similarity of language, and Roman Catholicism, to say nothing of race. The Poles contended that comparatively few Russians were to be found there. Moreover the agricultural development of the country depended on Poland on account of its geographic position. As to the figures given out by the Poles they were as follows: Assuming the German and Czechoslovakian plebiscites to be favorable to Poland, the population would be 27,500,000 and the area 291,000 square kilometers, as compared with an area of 753,000 square kilometers before the partitions, within which area at the present time about 52,000,000 people lived. Supposing the eastern boundary to be acquired, the population would be about 35,000,000. This represented Poland's maximum claim and still numerically she would fall short of her power before the partitions.

Such were the arguments put forth on behalf of Poland down to the middle of the year and widely presented in the American press. The opposite side though prominent enough in England was not so conspicuously argued in the United States. It consisted in general of a denial of the assumptions on which the above statements were made. For example, it denied completely that the people in the region occupied by Poland to the east of her provisional boundary had any desire to affiliate with Poland or indeed had any racial affinity with the Poles. They asserted the direct opposite of what is said above and contended that the regions were inhabited for the most part by Russians; also, that the Poles there who had been under alien government for nearly 150 years no longer had any attachment to a Polish state. Moreover if the principle that national re-adjustment and self determination were to go back a century and a half as was here claimed, a most confusing condition would arise throughout the world. It was not reasonable to carry national claims back 150 years into the past for the determination of present boundaries. It was argued also that Poland had been impelled to her aggressive policy by the instigation of France, for the French government wished to lose no chance of inflicting injury upon the Bolsheviks. The French government had encouraged Polish advance and had supplied the Poles with military leaders and advisers. The invasion of Russia instead of being open to objection was, from the French point of view, wholly desirable and subject to no limitation whatever so long as the hated Bolshevik régime existed. Critics of Poland therefore saw in her advance, the self-interest of a power eager to regain its ancient and forgotten place on the map, and ready to serve at the same time as a cat paw in the hands of a French government, which desired the downfall of a Russian government that would not pay the debt of the former autocracy to France. As to the argument that Poland was on Russian soil simply to protect her own frontiers, this was dismissed as ridiculous on the face of it for the occupation of territory extending 250 kilometers into the enemy's country was not

necessary to self-defense. Moreover it was usual to argue in all imperialistic ventures that when one government seized the lands of another, it was acting in self-defense.

In a note addressed by the American Secretary of State to the Italian Ambassador, August 10, the attitude of the United States toward Poland and the Soviet government was explained. The principal points are as follows: In general, the United States could not admit that a general European conference should come about as a result of the armistice negotiations and it refused to recognize the Soviet government. The United States desired a united free and independent Poland and would direct all its policy toward that end. It was not opposed to an armistice between Poland and Russia. But it could not take part in any plan which would result in turning the negotiations over the armistice into a general conference, for such a result would involve two things which the United States could not accept, namely, recognition of the Bolshevik government and settlement of the Russian question on the basis of a dismemberment of that country. The United States since March, 1917 had followed with sympathy the efforts of the Russian people to reconstruct their government on the basis of popular rights. It had been the first to recognize the justice of the revolution and to recognize the provisional government. It did not believe that the Russian people were responsible for withdrawing from the war and for the disastrous Treaty of Brest-Litovsk and it believed that the people would triumph over the existing anarchy in Russia. Its belief in this ultimate triumph of the Russian people explained its refusal to approve the decision of the Supreme Council at Paris, recognizing the so-called republics of Georgia and Azerbaijan, which had been formed within the limits of the former Russian state. Because Russia at present found herself in the grip of a brutal and irresponsible government, it did not follow that the dismemberment of the country should be admitted. While the United States government was in thorough sympathy with the Allied Powers in their desire for a pacific solution of the European problems, it did not see how the recognition of the Soviet government would tend to that result and it was therefore opposed to all relations with that government, aside from those necessary to discuss the matter of the armistice. It was an incontestable fact that the present masters of Russia were not governing by the will or consent of a considerable part of the Russian people. Although two years had now passed since they had seized the government promising to protect the constituent assembly they had as yet provided for no popular election. The present heads of the Russian government had openly declared that they were ready to sign with foreign nations agreements which they had not the least intention of observing. This attitude of contempt for their engagements was based on the theory that no agreement with a non-Bolshevik government was morally binding upon them. They not only had avowed this spirit, but had acted upon it; and their various promises of assurances and guarantees were not to be taken seriously. The government of the United States knew that the Bolshevik government was under the domination of a political faction which had many international branches through the so-called "Third International." This body which

was subsidized by the Bolshevik government out of the public revenue had for its avowed aim the spread of the Bolshevik revolution throughout the entire world. There was no common ground of understanding between the United States government and a government whose views of its international relations were so different from its own. The frontiers of Russia must include all territory of the former Russian empire with the exception of Finland, Poland within its ethnic limits, and such territory as should be assigned to the Armenian state. This principle would involve the withdrawal of all foreign troops from the territory within these frontiers, and, in the opinion of the United States government, a declaration to this effect should be made by the Allied and associated powers. This declaration ought to be followed by warning that no transgression of it would be permitted on the part of Finland or Poland, or any other power. If this were done the Bolshevik régime would be deprived of its support from the nationalist spirit of Russia.

In a reply of the French foreign office the principles of the above note were cordially approved.

VILNA. An obstacle was thrown in the way of an adjustment in Central Europe by the adventure of General Zellgouski at Vilna. On October 9 the White Ruthenian division of the Polish forces under his command captured the city which was unable to offer any serious resistance. The Lithuanian troops retired through the city as the enemy advanced in it, and there was but little street fighting. The invaders at once proclaimed a new Lithuanian government at Vilna, saying they had come to liberate the fatherland from "eternal enemies who tried to introduce bloody Bolshevik government"; and they repudiated the Russo-Lithuanian treaty. They appealed to the principle of self-determination. Their aim was to set up a government more favorable to Polish aspirations and ultimately secure annexation to Poland. On October 10 the Control Commission of the League of Nations arrived at Vilna but realizing that nothing could be done went on to Kovno. Zellgouski had acted in defiance of the Warsaw government, which afterwards disavowed his action, but Polish sentiment appeared to be in its favor and official disclaimers were mild and indicated an intention ultimately to pardon it. The Lithuanians protested to the League of Nations and the Powers. In the protest addressed to the United States they said the Polish government had permitted reinforcements to join the troops of Zellgouski. The Geneva Assembly of the League of Nations as noted above opposed the Polish raid on Vilna. It provided for the organization of a small force from Great Britain, France, and Spain, to which were to be added contingents from Belgium, Denmark, the Netherlands, Sweden and Norway. All these Powers contributed with the exception of the Netherlands which at the close of the year was awaiting action by the legislature. This international army entered the region between Poland and Lithuania and put an end to the conflict.

DANZIG. The free city of Danzig was placed under the protection of the League by the treaty. During the year it was under the administration of Sir Reginald Tower, as high commissioner, under the League. A constituent assembly was

arranged for and plans were made for a permanent constitution. There was anxiety in French and Polish quarters in respect to this constitution which was characterized as the work of pro-Germans and as containing several things prejudicial to Poland; and on October 22, the Poles through their delegates at Paris declared their intention of asking from the Council of Ambassadors the right to continue negotiations in respect to the Danzig agreement. The Poles alleged that this agreement did not fulfill the stipulations of the Treaty in respect to Polish access to the sea and Polish control of customs. The agreement created a committee of control over the port made up half of poles and half of residents of Danzig under a neutral president. The Poles demanded the right to buy land and develop the port so as to admit of an annual movement of about 5,000,000 tons; and they also demanded execution of the clause placing Danzig under the jurisdiction of the Polish customs. At the discussion of the Danzig question before the Council of the League of Nations, November 14, the Polish representative, Paderewski, demanded Polish military control on the ground that the port had been assigned by the Treaty to Poland, and that without military control, Poland could not have full use of the port. This was opposed by the German representative from Danzig who argued on behalf of the principle of self-government. In November the problem of Danzig had not yet been solved. Article 104 of the Treaty had provided for a convention determining the relations between Poland and the free city of Danzig. It was declared that the chief allied powers and their associates would determine this agreement which was to place Danzig under the Polish customs administrations to provide for a free zone and to assure Poland of the control and administration of the Vistula and of the railway system within the limits of the city as well as of the postal, telegraph and telephone communications between Poland and the port. The text furthermore provided for the assurance of Poland without restriction of the free use of waterways, docks, basin, etc., within the free city and the control the prejudice of the Poles residing in the city. Moreover no discrimination was to be made to the prejudice of the Poles residing in the city. The importance of Danzig to Poland was manifest. The new Polish State had no other outlet on the sea. Danzig being at the mouth of the Vistula dominated the entire Polish river system. It was argued that if Poland were denied the free use of the port she would be deprived of the necessary outlet for her commerce and would therefore fall under the economic control of Germany. The events of 1920 showed moreover that Poland being shut in between hostile Germany and a Bolshevik Russia could not defend her independence if she did not have the port of Danzig, to assure her of provisions. At the conference of the ambassadors, the representative parties, namely, the Warsaw Government and the Government of Danzig, submitted their projects. The former sought to prevent any obstruction on the part of the inhabitants of Danzig of Polish exports and imports. It wished to make Danzig a Polish port rather than a free port, as England had demanded. Accordingly it claimed part of the docks and it insisted on practically complete customs control. The

Danzig project on the other hand was based on the principle of the sovereignty of the free city. It called for a Danzig customs control independent of the Poles and for an administration of railways and water connections under a mixed commission. It sought to prohibit Poland from concerning itself with the Polish inhabitants of the city. The French consistently with their support of Poland throughout held on general principle that all the claims of Danzig were without foundation. It was impossible to reconcile the two plans and a compromise was likely to please neither party. The problem was unsolved at the close of the year.

THE QUESTION OF UPPER SILESIA. Much was said in the French press about a German campaign for acquiring Upper Silesia. The German commissioner in the matter of the plebiscite asserted the principle that persons born in Upper Silesia though not domiciled there should be entitled to vote and also persons who though not born in Upper Silesia had been domiciled there after December 1, 1918. On the Polish side, objection was made to this as indicating a desire on the part of Germany to profit from the votes of Germans who had merely by chance been born in the region, though they had left it without intending to return, and also of those Germans who had settled in Silesia after it was clear that Germany had an important interest in their doing so. It was estimated that between 250,000 and 300,000 Silesian Germans were scattered throughout the empire. With their votes and the admission of the more recent German settlers, the government of Berlin hoped, it was said, to falsify the plebiscite, giving the Germans a merely artificial majority. If the Germans insisted that the plebiscite should not take place until spring, it was because they sought more time for the transport of voters. The Germans were charged by the Polish and French writers with the intention of colonizing all the doubtful districts with compact masses of voters who would demonstrate in the favor of Germany. There were said to be in East Prussia certain districts where these immigrant voters were more numerous than the residents. The German papers were saying that English and Italian troops ought to maintain order during the plebiscite. The Polish and French writers seemed to see in this an exception that the Allied forces on guard would countenance the German programme. The danger of concentrating 200,000 or 300,000 Germans in Upper Silesia at the time of the plebiscite was emphasized. It was pointed out that German organization of a strictly military character had been carried out and that a central bureau had been established at Breslau apparently for administration purposes, but really composed exclusively for former soldiers with Prussian officers at the head. These were awaiting the right moment to intervene and settle the question by force. Reports were published to the effect that men belonging to the Reichswehr, armed with revolvers had been sent into Upper Silesia to organize a movement against the Poles and the French. The latter regarded as a suspicious circumstance the fact that Germany insisted that the plebiscite should be held in all the districts on the same day. They implied that this indicated a purpose to employ the troops that Germany had organized. The Germans were said to be making every effort to influence the Silesian population—for example, by

promising them self-government as a part of the empire. Hopes were held out to them that they would possess complete autonomy under German government. Chancellor Fehrenbach declared that if the result of the plebiscite were favorable to Germany, Silesia would be admitted as a self-governing state under the German constitution. In other quarters of Germany, however, there was opposition to this policy and it was proposed especially by Prussian statesmen that the government should confine itself to vague promises. These charges against the German government had been made by French and Polish partisans frequently during 1919 and they continued throughout the year. As the date appointed for the plebiscite drew near there were reports that war between Germany and Poland would follow a decision favorable to Germany. The plebiscite was deferred till early in 1921.

FRANCE AND POLAND. As the comments of the Liberal papers in England and the United States exhibited the Polish situation in a wholly unfavorable light and while attacking the French position did not make clear what that position was, the following statement of the French case is here presented. On June 5, 1918 the Supreme Council of War decided that the creation of an independent Polish state with free access to the sea was one of the conditions of a solid peace and the rule of law and justice in Europe. In the Treaty Articles 87 to 93, inclusive, embodied this decision. Finally Poland as a signer of the Treaty became a member of the League of Nations. Now inasmuch as the Bolsheviks from the beginning were bent on the destruction of the Polish state the policy of the Allies in the matter was definitely fixed. It was their duty to protect Poland. Moreover, in all the countries of Europe the Socialist organizations had ranged themselves on the side of the Bolsheviks and they did not content themselves with mere declarations but acted openly against Poland. This had been the attitude of the British Labor party, the Italian railway men, and the extreme Socialists in German Switzerland, for example. Poland was struggling against these radical forces which were trying to dominate and exploit the working populations. The attitude of the governments of the countries concerned had been as follows: In the first place Germany did not conceal her desire that Bolshevism should work in her interest for the destruction of the Treaty, and she had an especial interest in Poland on account of her wish to regain the Polish provinces that had been detached from Prussia. She would like to play the role of savior of Russia. Her policy had been clearly indicated by events in the Saar, in Upper Silesia, in Eastern Prussia and at Erfurt. As to the little states of Central Europe, threatened as Poland was by the danger of absorption within the Bolshevik state, their attitude was hard to understand. For example, Lithuania not content with offering her territory to Germany and Russia for the passage of their troops had even united her forces with the Germans and Bolsheviks in the attack on Poland. In the autumn relying on the support of the Germans and the Soviet government she refused to enter into any agreement with Warsaw. Czechoslovakia had taken advantage of Poland's difficulties by settling in her own interest the question of Teschen, and after that had followed a neutral policy. Rumania had remained silent.

While the course of these little states could perhaps be pardoned in view of their weakness the attitude of the great Powers among the Allies had no such excuse. The British cabinet had taken squarely a position against Poland. While Poland was claiming, according to her rights, the material aid of her Allies, England openly favored the interests of the Bolsheviks. At least this had been the spirit of the government though public opinion in England seemed not to favor it. Italy had completely reversed her policy and drawn away from Poland. Public opinion looked to an intervention of the Council of the League of Nations but nothing had come from that quarter. Late in the summer there had been a meeting at London to consider the danger of a conflict between Moscow and Persia. The representative of the League at Danzig had caused the passage of arms and munitions destined for Poland to be forbidden contrary to Article 104 of the Treaty. Only France had maintained a worthy attitude.

In this brief summary it will be observed that no attention is paid to any of the arguments reiterated far and wide in the press of English-speaking communities and particularly the argument that Poland had taken an aggressive course. Although Polish troops had been for months hundreds of miles behind their own borders having invaded the territory of the Soviet government and although Poland claimed territory not only far in excess of that allotted to her by the Treaty but territory peopled by an alien race, the French case as above indicated had nothing to say on these points. In general each party to the dispute proceeded along the line of its own interest or beliefs paying no attention to the arguments of the other. The consequence was that in this dispute as in many others during the year most of the discussion was completely valueless serving only to stimulate those readers whose minds had been made up already.

THE ARMISTICE AT RIGA. The signature of the armistice at Riga by the Polish and Russian delegates gave assurance of an early peace between the two countries. In quarters friendly to Poland there was some surprise at the moderation of the Bolsheviks and it was hinted that the peace was only a provisional one. The question of Galicia which was the most difficult of all was settled in principle. Among the French the fear was expressed that the Bolsheviks were merely making a temporary truce with Poland on account of their insecure position in Russia and the danger that was threatening them at the hands of General Wrangel. Having their hands free on the Polish frontier they would be able to transfer their forces to the Crimean frontier and dispute the advance of Wrangel. It was said that the Germans had made an agreement with the Soviet government to aid it in its struggle with all its enemies and that war material was passing from Germany into Russia. It was said specifically that military transports destined for Poland had been held up in the Kiel canal and at Danzig contrary to the terms of the Treaty and that the Council of Ambassadors protested and finally secured the free passage of these transports. The German authorities, however, disclaimed responsibility for these incidents laying the blame either on their Bolshevik workingmen or on the force of necessity. There was no

doubt, however, according to pro-Polish writers that the Germans were responsible.

TREATY WITH HUNGARY. On account of disturbed conditions in Hungary, the treaty between her and the Allies was delayed for three months. It was presented to the Hungarian delegation, January 15, but straightway encountered such determined opposition on the part of the Hungarians, that it was reconsidered by the Supreme Council. Some slight changes were made and the treaty was again presented and was signed in Paris, June 4. The main protest had been made against the territorial clauses. These provided that Hungary should give up her claim to all territories awarded to Italy, Jugo-Slavia, Rumania and Czecho-Slovakia. The Allies, however, would not give way in this respect. Other features of the treaty were as follows: Limitation of the army to 35,000 men; requirement that Hungary should be responsible for her part of the Austro-Hungarian debt; free export of food-stuffs into Austria; and the assurance to Austrian buyers of as favorable terms as those offered to Hungarians. The other clauses were similar to those of the treaty of St. Germain with Austria. The signature of the treaty was preceded by agitation in Hungary on the part of the irreconcilable group of the Christian National party headed by the former prime minister, Friedrich. The day of signing was made a day of national mourning in Budapest and was the occasion of a series of riots in which several Jews were killed and many wounded. In the National Assembly and in the churches and public meetings, the treaty was bitterly denounced and speakers, including members of the cabinet, declared that its terms could not be fulfilled and that it contained the germs of future wars. The treaty was ratified at Budapest, November 15. See HUNGARY, *History*.

FRENCH POLICY IN CENTRAL EUROPE. In the French press, M. Millerand was applauded for having pursued a policy in central Europe favorable to the interests of the liberated nationalities. It was said that he had placed them under the protection of France and this policy in central Europe, especially along the Danube and in the Balkans was welcomed as certain to increase French influence and consolidate the results of the victory. The same policy as seen by many British Liberals and especially by the members of the Labor party were described as follows: The French government with the aid of capitalists was said to be extending its economic control over the new states of Europe. Great munition plants in Czecho-Slovakia and in Upper Silesia and Poland had been acquired by France. The economic life of Hungary was passing under French control; France was paramount in banking circles and in the management of railways and river navigation and French interests had recently secured concessions in the port of Budapest. French journalists saw in all this a praiseworthy activity and prudence on the part of their diplomats and financiers, while in England the policy was described as part of a vague and magnificent scheme for giving France the leadership in Europe through influence over the little states and Poland up to the shore of the North Sea. In certain quarters this policy was attributed to the determined hostility of France against Bolshevism. French writers admitted that this element entered into their foreign policy and congratulated themselves on that

fact. France was the country that stood, according to them, for good order and had escaped the dangerous tendencies under certain other governments toward anarchy. She certainly desired to serve as a bulwark against disorder for the protection of the little states in their dire need of external and internal peace.

LITTLE ENTENTE. The text of the convention known as the Little Entente was published at Belgrade, November 11. It was defined as a purely defensive agreement and it provided that in the event of an unprovoked attack by Hungary on either member of the convention the other was to come to its aid and that neither of the contracting parties should conclude an alliance with another State without the other's consent. The convention was to be submitted to the League of the Nations and it was to last two years. The contracting parties were Czecho-Slovakia and Jugo-Slavia, but it was expected that Rumania would be induced to enter and efforts were to be made to secure the adherence of other Balkan States. In the meanwhile M. Take Jonesco, the Rumanian foreign minister, in the course of an interview in September had set forth the nature and purposes of the Little Entente. The question had been raised whether it would pursue a neutral attitude between eastern and western Europe or would side with one or the other. He said that its policy would be neutral and that its aim would be distinctly for the maintenance of peace but that as the western Powers were embarked on that same policy it would naturally unite with them. The main object of the Little Entente was not only to safeguard the rights of its members against rivals but especially to protect the general European interests. Inevitably difficulties and differences had arisen among the five states. If the League of Nations were already what it ought to be, there would be no need of such measures as the formation of the Little Entente. But in the present indeterminate situation there was such a need just as France had found it necessary to enter into an agreement with Belgium. If the Little Entente were meant to serve as a war measure, it could not last a week, but as an instrument of peace working along with the western powers it would be one of the best results of the war. As to the relations with Hungary, it was not expected that the Hungarians would be contented necessarily with the results of the war; or that they would cease at once to demand the incorporation of territory that was inhabited by members of their race. The new combination would live on friendly and peaceful terms with Hungary. Nevertheless it would not look in that quarter for support but rather would rely on the friendship of France for Rumania. As to the Danube question they would certainly arrive at an understanding. In Rumania the question was not merely a technical one but stirred deeply the popular imagination because it was by means of the Danube that Austria had in the past held Rumania by the throat in order to enforce an Austrian alliance. Demands that the status of the Danube as regards the Danube Commission and the right of the states on its banks should be the same as that which they had established on the Rhine seemed so just that it was hard to imagine why they should be refused. It would be absurd, for example, to refuse on the Danube the same sort of arrangement that France had accepted on the Rhine.

The origin of the Little Entente may be briefly outlined as follows: When Poland seemed to be in danger the foreign minister at Prague, M. Venes, took measures to insure the neutrality of his country. The policy of Czecho-Slovakia was to avoid any form of conflict with its neighbors and especially as regarded Germany and Russia neutrality had to be observed because Czecho-Slovakia had a considerable German population on the one hand and was racially akin to and therefore in sympathy with the Russians. The foreign minister then set about organizing a league of neutral nations which should hold itself apart if the Germans and Russians formed an alliance. The new grouping known as the Little Entente was formed at the moment when the members of the great Entente were unable to agree upon a policy toward Russia. Czecho-Slovakia and Jugo-Slavia first united and then tried to win over Rumania. The Rumanians gave only a conditional consent, however. The new combination was especially concerned with the danger of Hungarian attack. Several great provinces having been taken from Hungary it was feared that she might take advantage of circumstances to try and regain her lands. The new grouping was regarded with some alarm in France especially as affecting the recent attempts of the French government to come to some understanding with Hungary. An agreement had been concluded between French and Hungarian commercial bodies which promised greatly to develop French commercial interests in Hungary. It was an opportunity for France to take her part in the exploitation of banks, railways, electrical works, etc., in Hungary before the Germans regained their commercial strength. It was hoped that French enterprise might succeed in replacing German capital in developing the resources of countries that had lagged behind in respect to industrial progress. The policy of France was to aid in the establishment of powerful states in the east of Europe that might serve as a counterpoise against Germany in the future. This accounted for their interest in the return of orderly government to Russia and in the desire that out of the present conflict in the Balkans a strong and stable system might develop. Certain French writers argued that Hungary was the best nucleus for a new Anti-German group in the southeast of Europe. However, the authors of the economic agreement between France and Hungary including the French minister were not of that opinion and it was argued that too great concentration of French capital in Hungary would be unwise in the long run.

The situation in the Balkans was described by travelers as still serious. Everywhere commerce was impeded by customs and the country was guarded by police. Although bridges had been rebuilt, free communication was still impossible on account of the suspicions between the states. The railway communications were unsatisfactory owing to the lack of adjustments at the borders, the different lines having no connections. Between Hungary and Austria all communication was suppressed because in the opinion of the Austrian Socialists, Hungary was in a reactionary condition. Hungary was in fact cut off from the rest of the world and in order to go from Vienna to Budapest it was necessary to take a steamer. The necessity of

passports and certificates of various kinds involved travel in a tangle of red tape. The postal service was bad and according to some reports practically inoperative. The authorities of one country blamed those of the other for these conditions. In short the Balkan countries were described by travelers as separated from each other by Chinese walls and commercial communication was out of the question.

THE ADRIATIC QUESTION. As noted in the previous YEAR BOOK, conferences on the Adriatic question were held in London during December, 1919. As a result of these, a memorandum was prepared by the representatives of France, Great Britain and the United States and delivered to the Italian representative December 13. This provided that Fiume should be a free buffer state under the League of Nations and that the city and hinterland of Zara should be a sovereign state under the authority of the League, if it became a member of the Jugo-Slav customs union; also that four specified islands were to be transferred to Italy and that Albania as an independent state should be administered by Italy under mandate, and that the city of Valona should be turned over to Italy. The other demands of Italy were rejected. Italy now requested that the treaty of London be fulfilled; and a new conference took place in Paris for the purpose of forming a compromise agreement. In this the United States was not represented. The new conference modified the December proposals, and provided that Fiume should not be a free buffer state, but an independent state under the League and joined to the territory of Italy by a narrow strip along the coast, while its contiguous city Sussak should go to Jugo-Slavia, the port and transportation to be under the League of Nations; Zara to be an independent state under the League; the Italians of Dalmatia to have the right to vote for Italian nationality without leaving the country; Italian business enterprises in Dalmatia were to be safeguarded by treaty. This disregarded the boundary line proposed by President Wilson. The Jugo-Slav government accepted this settlement in general, but insisted on the frontier proposed by President Wilson. Upon being pressed for a more definite answer, the Jugo-Slav government rejected these proposals. On February 12 the Supreme Council insisted upon their acceptance without change, or the acceptance of the treaty of London. On February 14 President Wilson declared to the British, French and Italian governments that if the Adriatic problem was settled without the support of the American government, the latter would consider withdrawal from participation in European affairs. The prime ministers of the Allies replied in defense of their arrangement and appealed to the President not to withdraw. The President replied, February 24, declaring, in justification of his objection, that the proposed agreement was contrary to the principles for which the war was fought, and suggesting that new conferences should take place between Italy and Jugo-Slavia for the purpose of agreeing on terms acceptable to both. The Allied prime ministers, February 27, offered to withdraw both the proposals of December 9 and January 20 in order to facilitate a solution. The President refused to consent to the withdrawal of the proposals of December 9 or

to the application of the treaty of London. New negotiations between Jugo-Slavia and Italy resulted in a failure to agree, March 9 but were later resumed.

THE TREATY OF RAPALLO. On November 12, the Italian and Jugo-Slav governments came to an understanding on the points at issue and signed the treaty of Rapallo. According to the treaty of London, concluded by the Powers of the Entente four weeks before the entry of Italy in the war, Italy was assured of the control of the Adriatic Sea. For the terms of that understanding and the points at issue after the armistice see preceding YEAR BOOKS.

The agreement reached at Rapallo was a compromise and as necessarily happens in such cases both parties made a sacrifice of their extreme claims. As to Valona and the Albanian protectorate Italy had abandoned her claims. In the arrangement at Rapallo, she recognized Jugo-Slav unity; renounced Dalmatia, with the exception of Zara, and renounced also all but six of the islands; and restored to Jugo-Slavia two small territories lying to the southeast of Istria. On their part, the Jugo-Slavs agreed to an Italian frontier enclosing all of Istria and extending as far as Monte Nevoso; and gave up any claim of control over the railway and port of Fiume. Generally, it appeared that Italy had agreed to limit her control of the Adriatic to the northern sea, while Jugo-Slavia had consented to the annexation by Italy of half a million of their fellow citizens. Yet in one sense, both of the Powers gained by the transaction. As to the Jugo-Slavs, they acquired a considerable part of the regions occupied by Italy after the armistice. If Italy had retained those regions, Jugo-Slavia would have been shut off from the Adriatic, whereas she now had ample possessions on the coast. As to Italy, an Italian newspaper set forth the results as follows:

"Encircled by her rocky barriers which are as formidable as a stormy sea, Italy is henceforth to be a sort of continental England. She has realized her most difficult aims—so difficult that the collapse of a giant empire a thousand years old was necessary for their realization. She is now hemmed in on the west by France, which certainly has no designs on Piedmont and on the east by a state, only one-quarter the size of Austria, which has recognized the Italian rights over all Italy. Henceforth, Italy is really a great power and she owes this to her own strength and not to the concessions of the European concert. That means in a word that the victory of Vettorio-Veneto was no ordinary victory but the end of an old system and the beginning of a new one. Three years before, Italy went to Rapallo suffering the humiliation of Caporetto. She now goes to Rapallo wearing the crown of victory." This however, did not represent the attitude of all the press. Certain papers declared that the last word on this subject had not been spoken and protested against an arrangement which left the Jugo-Slavs in possession of such important seaports and islands. The nationalists were far from content.

Fiume. In spite of the sensational methods of d'Annunzio the question of Fiume lost its hold on public attention during the year. In Italy itself it appeared not to be regarded with much seriousness. In September a proclamation of independence was issued by d'Annunzio on the

anniversary of his first appearance in the country and a constitution was made public. The new state was known under the title of the Italian Regency of Quarnero and included the city of Fiume along with the port and the railway, the islands which traditionally had belonged to Venice, subject to the approval of their population, and all the neighboring communities that should desire to unite with the new state if the latter decided to accept them. The limits on the west touched Italian territory. On the east they were to be drawn in accordance with the necessities of the future and by means of conventions with the communes which might wish to unite with the new state. The constitution included some features that occasioned ridicule—for example, articles dealing with architecture and decorative art and more or less bombastic phrases pertaining to the dawn of a new era of humanity, etc.—and critics remarked that the poet adventurer had confounded government with masquerade. After the announcement of the Rapallo agreement the d' Annunzio government issued a formal protest. This being disregarded d' Annunzio threatened to take possession of certain parts of Dalmatia and the islands on the coast. Thereupon the Italian government took measures to safeguard its decisions. A blockade of Fiume was enforced and the troops of d' Annunzio were shut off from the sea. A virtual state of war existed beginning on the afternoon of December 3. Hostilities came to an end, December 29, and the protocol was signed December 31. The terms included the release of the troops from the oath of allegiance to the Regency of Quarnero; restoration of prisoners; surrender of arms; and the giving up of certain islands in the Gulf of Quarnero. A new provisional government was set up.

BALKAN SITUATION. The economic situation in the Balkans was the product not only of the war itself but of the lines of division drawn between the peoples by the terms of the Treaty. Proceeding on the principle of racial unity so far as possible, the Treaty divided the peninsula among the respective new states without any regard to economic unity. Thus it happened that these states were generally cut off from some part of the economic resources upon which their populations depended. For example Czechoslovakia while rich in minerals and having a supply of industrial machinery was cut off from the sea and lacked means of feeding the population. The Slovaks on being joined to the Czechs were cut off from their natural economic relation with the Hungarians, nor did they have direct communication with Bohemia and with Moravia. The former Austrian kingdom suffered most of all being reduced to those provinces inhabited by Germans and containing the city of Vienna. It was cut off completely from the sources of food and raw materials and on the other hand, for political reasons its union with Germany was refused. Jugo-Slavia, a state almost as large as Italy was in danger owing to the Italian claims of being completely cut off from the sea. Plenty of food was produced but it was a question whether the means of export would be available. Again Hungary was deprived of her mineral resources and left within frontiers that offered no natural protection and without any outlet to the sea. The railway situation as described at the beginning of 1920

was chaotic. The railway systems of the former empire had been turned into short lines terminating at the respective frontiers and with no provision for through trains. In the mutual fear that prevailed the rolling stock of one country could not be allowed to pass into the other lest it should be seized. In short the predominance of political ideas in the settlement had entirely shattered the economic system upon which the different populations had hitherto been supported. Hence the importance of plans for a new integration through alliances or otherwise which under one aspect or another were much discussed during the year. It was pointed out that this Balkanization of Middle Europe was especially dangerous in view of possible Bolshevik aggression. This was the view of the French and of the writers in this country who supported the French policy. It was argued that when the Bolsheviks advance westward began the only protection would be Rumania and Poland for the whole region from Bavaria to Belgrade was in hopeless confusion.

THE TURKISH TREATY. The settlement of the Turkish question offered extreme difficulties owing to the internal disorders and racial and religious conflicts. Work on the treaty with Turkey began in February and was completed May 11 when the treaty was presented to the Turkish peace delegation. It left Constantinople subject to the Sultan, but provided for its permanent occupation by a small force of Allied troops. Certain coast areas, the straits of Dardanelles, the Sea of Marmora and the Bosphorus along with their approaches and the adjoining islands were to be placed under a Straits Commission appointed by the League of Nations and consisting of French, British, Italian, and Japanese representatives, with two votes each, and of Greek and Rumanian representatives with one vote each, provision being made for the representation in the future of Russia and the United States with two votes each, and of Bulgaria with one vote. The Straits were to be garrisoned by an international guard and to be opened in times of peace and war to all vessels without distinction of flag and not to be subject to blockade. Other terms of the treaty limited the Turkish army to 35,000 men subject to the addition of 15,000 in case of special necessity; provided for destruction of fortifications along the straits; prohibited the maintenance of military air forces, etc.; and included the following financial terms: No loan to be contracted without the consent of an international finance commission consisting of representatives of France, Italy and Great Britain, which commission was to control the budget, supervise the financial administration of the reform of the currency, and to fix the sum to be paid by Turkey for the cost of occupation; financial losses due to the war to be admitted as liabilities by Turkey. Other features were, protection of racial minorities; release of political and religious prisoners; reform of the laws in the interest of the liberty and safety of foreigners; trial of Turkish war criminals by Allied military courts; surrender of persons guilty of the massacres since August, 1914, to be tried by a court under the League of Nations, or some similar court. The political penalties were severe and amounted to the dismemberment of the empire. At the time of the war the total area was about 710,224 square miles and the

population 21,273,000, including 10,882 square miles with a population of 1,891,000 in Europe. The terms reduced the area to less than 100,000 square miles and left the population about 5,000,000 who were mostly Mohammedans. Turkey was to give up Thrace to Greece with the exception of a small region; to acknowledge Greek possession of the islands that Greece was occupying; to give over to Greece the administration of a large region in Asia Minor including Smyrna, Magnesia and other localities, which region had the right to decide whether or not it would annex itself to Greece by a popular vote to be held after two years. Turkey was to recognize the independence of Armenia, Syria, Palestine, Mesopotamia and the Hedjaz and was to allow self-government to Kurdistan. It was provided that the President of the United States should be invited to lay down the western frontier of Armenia and that the boundaries of Syria, Mesopotamia and Palestine should be fixed by special commissions. These last three divisions were to be under the direction of mandatory powers. Turkey was further to recognize French authority over Tunis and French Morocco, Italian over [?] Liberia, the Dodecanese and Castellorizo, and British over Cyprus and Egypt. To Great Britain, also, Turkey was to give over the rights that she had secured in the Suez Canal Treaty in 1888. The British government was to assume responsibility for debts based by Turkey on tributes formerly payable by Egypt and Cyprus now that those tributes had ceased. The execution of the treaty was to be under an inter-Allied commission of control at Constantinople which was to be supplied with inter-Allied troops to enforce its terms. The treaty did not embody some of the provisions recommended by President Wilson. The latter in March had addressed a note to the Allies urging among other things that the Turkish government be expelled from Constantinople, eastern Thrace be given to Greece, the port of Trebizond to Armenia, and the cities of Adrianople and Kirk-Kelissé in northern Thrace with an adjoining territory be given to Bulgaria. The Turks objected vigorously to the treaty and the Nationalists under their leader, Mustapha Kemal Pasha, definitely refused to accept it.

At length the date for the signature of the Turkish treaty was fixed at June 25. Meanwhile there were many reports in the western papers of hostility on the part of Turks toward the Greeks. It was said that the National party in Turkey was determined to fight the Greeks in Thrace and at Smyrna and that the Bulgarians would take the side of the Turks. To this the Greek press replied that such reports should not be taken seriously. It was reported, for example, that a certain Turkish general was going about trying to stir hostility to the Greeks at Adrianople and elsewhere. To this the Greek press replied that only a few restless spirits were being won over to his side and that the forces under him amounted to nothing. According to the Turkish press, if the Turks of Thrace resisted the Greeks, France and Italy would insist upon a revision of the Turkish treaty and change the boundary. Many reports were circulated by supporters of Constantine to the effect that the internal situation in Greece was serious—that M. Venizelos was losing ground and deserved to lose it. In Greece, according to a supporter of the government, the great mass of the people, however, were loyal

to Venizelos. A common remark was to the effect that if Venizelos succeeded in securing for Greece, Thrace, Smyrna, Epirus and the islands, the country was for him, but if he failed, then he had been fooled by the Allies and it would be a proof that ex-King Constantine's policy of neutrality would have been a wiser course and the country would not be for Venizelos. The success of Venizelos in securing his demands of the Allies won him wide support and he was so confident of his hold on the people that he twice declared in Parliament that if he were not returned by a majority at the next election he would abstain from politics. See *GREECE, History*.

By November, the Turkish Nationalists had entirely broken the power of Armenia (q.v.). The capital of the Armenian republic was occupied by their troops and the Russian government was preparing to come to some arrangement with the Turks for the use of Armenia as a road to the Mediterranean. The opponents of the Turkish Nationalists had had as their main support England and Greece; the former supplying the naval power and the latter the military. Some successes had been won by the Greek general during the summer and a part of western Anatolia had been conquered but the Greeks were not strong enough to complete their work. The war had ceased to be popular in Greece and a demand was made everywhere that the troops should be brought home. The popularity of ex-King Constantine was due largely to the feeling of disappointment at the results of the Greek expedition. Although Constantine had committed himself to the expansionist policy of Venizelos, it was not believed that he would keep up the war against the Turks. In France there was a tendency to draw to the side of the Turks as the successful party in order to promote the interests of France. Since Greece had rejected Venizelos, the French argued that advantage might be gained from Turkey at the expense of the Greeks. None of the powers had the intention of sending an army into the National Turks' domain, that is into Anatolia. In the confused state of affairs President Wilson was unable to take any effective measures for mediation on behalf of Armenia. See *TURKEY and GREECE*, paragraphs on *History*.

Early in December a difficulty arose at the Geneva assembly between the French and English delegates in regard to Armenia. The French representative desired that Armenia, that is to say, the Armenian Republic, be admitted to the League of Nations. To this the English representative was opposed. M. Viviani made an eloquent plea on behalf of the French proposal, but was voted down and immediately hastened to Paris, where it was reported that a ministerial crisis was impending, the subject giving rise to much discussion and many conjectures in the press. A lack of sympathy with the French proposal and with the French government was reported in France and the administration itself was said to be divided on the question.

GREECE AND THRACE. At the conference of London, western Thrace, so far as was occupied by Allied forces, was awarded to Greece and all Turkish territory on eastern Thrace to the Tchataldja line. At the conference of San Remo, the Turkish treaty was completed. The Greek representative M. Venizelos thereupon returned to Greece with the promise to occupy western

Thrace at once. Despite certain protests by the Bulgarians, the Greek army occupied western Thrace May 10th. There were various reports tending to show that the Greeks were not welcomed by the inhabitants. These were denied by the Greeks themselves, who maintained that the army was received with popular rejoicing, that its conduct had been exemplary and that they were received with favor even by the Turks, who preferred their rule to that of the Bulgarians. The Greek press subsequently published other articles indicating the good-will of the population toward Greek control.

ANGLO-FRENCH AGREEMENT IN THE NEAR EAST. An accord was reported in the press between the French and English governments in respect to their zones in the Near East on December 24. The limits between their two spheres were for the first time laid down in the treaty of May, 1916. After the armistice, negotiations between M. Clemenceau and Lloyd George resulted in certain modifications of these terms. France gave up her claim to the Mosul region in December, 1918 and agreed at the beginning of 1919 to international control of Palestine under a British mandate. It now remained to determine the limits of Syria and Palestine. The question was settled in London before the San Remo conference, but the Zionists, who had taken up their abode in Palestine with the approval of Great Britain, demanded certain changes in their own interest. In December these points were discussed between Lloyd George and the French Prime Minister, Leagues, in London and the final accord on December 24, according to the press, defined in detail the boundaries between the territories under French mandate, namely, Syria and Libanus, and those under British mandate, namely, Mesopotamia and Palestine. Other features were an arrangement between the two governments for the use in common of the line of railway between Lake Tiberias and Nasih; the use of the waters of the Upper Jordan and of the Diver Yarmouk and their branches for water power and irrigation in Palestine, subject to an examination by experts; the application in the interest of France of the agreement of San Remo in respect to petroleum; and the stipulation that Great Britain would not alienate the island of Cyprus without the consent of France. The result of the agreement was to increase the area of British Palestine at the expense of French Syria beyond the limits agreed upon in 1916, bringing at one point the frontier of Palestine to a distance of only about seventy-five kilometers from Damascus.

GREAT BRITAIN AND PERSIA. The agreement between the British and Persian governments has been noted in the preceding YEAR BOOK, which contains a summary of the document published on that occasion. In 1920 this agreement was the subject of increasing criticism on the part of the French. It was taken as explaining in part the more or less friendly attitude of Lloyd George toward the Russian Soviet government since he was afraid of Bolshevik encroachments in Asia. In England the press abounded in expressions of anxiety over the possible effect of Bolshevik propaganda on the vast populations under British rule which held to the Moslem faith. This anxiety did not arise merely from that which had happened in Mesopotamia but was occasioned by events in Persia as well. Un-

der the pressure of business men and especially certain leading financiers who sought to get possession of enormous petroleum deposits in Mesopotamia and Persia, Great Britain had pursued in Persia a dangerous policy. In the northwest of that country she maintained a small army which by the autumn of 1920 had been cut off from Bagdad. Its fate caused much anxiety at that time among the students of the eastern question. The Moscow government denied that it had any part in the attacks on Persia by certain Bolshevik detachments. It was pointed out by French writers that these denials were incredible; that the Russian government knew the sentiment of the Persian people in respect to England and took advantage of it on every occasion. Russian propaganda was believed to be behind the Egyptian revolution and it was supposed that the Bolsheviks were hoping for the same success in Asia. Lloyd George as a master-stroke had signed with the Persian government or rather had forced the Persian government to sign within less than a year after the armistice an agreement which practically turned Persia into a British protectorate. For the loan of £50,000,000 at 7%, Great Britain assured herself by the accord of August 9, 1919, of all that had any value or interest to her in the empire of Persia. The Persians did not protest because they no longer had any representative body to express a popular protest and because they were at England's mercy, but their irritation was profound and made itself known to all travelers by the hostility toward westerners generally. The present Shah accused of having sold out his country was said to be extremely unpopular. At any moment the discontent might take the form of an outbreak. The military operations in Mesopotamia had not yet resulted in the pacification of the country. The Persians were observing closely the course of events in Mesopotamia which was also watched with careful attention at Moscow. The Persian policy of England might therefore come to grief. This point of view was brought out in the French press and it was said that in acting as she had done England seemed to have, for once, failed in foresight and in political sense. Her policy was also criticised from this point of view by certain English papers, for instance, the London *Times* declared, "It is time that we should have a frank and plain explanation of our policy in Persia. So long as we do not know what our government plans in Persia its promises regarding Mesopotamia will not receive much credit."

CHINA AND JAPAN. During the early part of 1920, the Chinese boycott of Japanese goods continued and had a serious effect on the finances of the latter Power. Although the Chinese government was under the control of the pro-Japanese militarist party it was unable to stem the tide of hostile popular sentiment. The motives for China's refusal to negotiate over the question of Shantung were reported as follows: As a preliminary, China insisted that the Japanese government should cease to occupy Tsingtao, the Kiao-chow leased territory and the Tsingtao-Tsinan railway and should restore these properties to China. China would be then ready to form an agreement with the powers interested in trade with Shantung with a view to internationalizing the port of Tsingtao and its public utilities, China to have complete control of the

customs of the port and to re-purchase the German shares in the railway by means of an international loan. After the railway had passed into Chinese hands it could be incorporated in the Chinese railway system and its management then placed under international supervision. In Japan there seemed to be a resolute intention to negotiate, and repeated efforts were made to reopen the question with China. According to Mr. Thomas W. Lamont, who represented a group of American financiers who were negotiating along with British, French and Japanese groups with the Peking government for a loan of \$50,000,000 to China, the repudiation of the German issues of the Hukuan railway by China was an obstacle to further loans. Japan, he implied was ready to withdraw its reservations in regard to Manchuria and Mongolia. On May 7 the Japanese government officially announced this withdrawal. Thus these two provinces which had long been excluded came now within the operation of the consortium. See CHINA and JAPAN.

JAPAN AND THE OTHER POWERS. There was much said during 1920 about the alleged imperialist aims of Japan, not only in the United States, but in England, and on the Continent. The question of renewing the alliance between England and Japan was raised early in the year but was postponed on account of the anxiety that it caused not only in the United States but in the British dominions in the Far East. Twelve months' notice was required before the denunciation of the treaty according to the terms of Article 4. No such notice having been given, the treaty by its own terms was prolonged until July, 1922. As to the Japanese situation in 1920, it was pointed out by those who feared Japanese imperialist designs that their conduct throughout the war had been exclusively directed to the gaining of national advantage. Thus, while the war was going on she devoted a large part of her time to getting the upper hand in China, and the end of the war found her the sole foreign power in Siberia. The retention of Eastern Siberia would complete geographically a dominion of over 2,000,000 square kilometers with a population of 80,000,000, comprising besides eastern Siberia, Mongolia, Manchuria, and Shantung. In south Siberia alone, the cultivated area was estimated at 7,775,000 hectares. The Japanese also had recently seized that part of Sakhalien which hitherto had not belonged to them and Kamchatka as well as the island of Yap which was a desirable strategic base halfway between Australia and Japan, assuring Japan of the control of all the cables in that part of the Pacific. The ultimate aim of dominating Asia as the first step toward world conquest was charged against her by the extremists. The so-called Asiatic or yellow peril which had been an occasional feature of articles on foreign politics for many years became especially menacing in the magazines and newspapers in 1920.

JAPAN AND THE UNITED STATES. The real estate question in California (q.v.) which gave great offense to a certain element in Japan was a subject much discussed in the press in the latter part of the year. In Tokio the opinion of the press was that it seriously damaged the interest of Japanese residents in California. It placed serious restrictions upon them that were not found under the previous law, not only depriving them of the right to own or lease landed

property but even attacking rights already acquired. A former foreign minister in Japan characterized the policy as a virtual confiscation of the product of Japanese labor. Another prominent public man, president of the Japanese American Society, declared that it would sweep away in one day the friendship that had developed between the two countries in sixty-four years. Similar attacks on the measure were made by other Japanese notables. The House of Peers unanimously demanded a prompt settlement of this irritating problem, and called upon the government to assume a firm attitude toward the United States. Several workingmen's organizations took up the matter and decided to protest in regard to it to the workingmen of the United States. Efforts to call mass meetings were checked by the government in order to prevent unpleasant consequences. While in Japan it was recognized that the question of foreign property in California was partly a matter of internal public law in the United States, it was believed that Californian authorities, out of regard for good relations between the two countries, ought to consent to submission of the question to diplomatic discussion between Washington and Tokio. It was hoped at least, that some reasonable compromise might be reached, as another question likely to disturb the relations of the two countries was about to arise. This concerned the little island of Yap, in the Carolinas. In 1885 Germany had tried to take possession of it as a coaling station. Spain protested and Bismark offered to submit the question to the arbitration of the Pope. The latter decided in the favor of Spain. After the Spanish-American war, the Spanish government sold the Carolina Islands to Germany and in the course of the late war they fell into the hands of the Japanese. Various agreements in 1917 between Japan and the Allies stipulated that the islands lying to the south of the equator should be included in the sphere of British interests, while those to the north should fall within the sphere of Japanese interests. This arrangement subject to a restriction in respect to mandates under the provision of the League of Nations was confirmed by the Supreme Council, May 7, 1919. In 1920 at the instance of the American national authorities the Washington government brought this decision into question. The island of Yap had become the terminus of several Transatlantic cables and it would constitute for the United States a valuable naval base on the route to the Philippines. Hence, the American government wished Japan to consent to an arrangement of some sort to that end. The irritation of Japanese sentiment was likely to prevent such a concession.

In November according to a Japanese authority, there was no quarrel over the question of immigration which had been settled by an arrangement involving the prohibition by Japan of the entry of Japanese laborers into this country. He said that the government had consistently pursued a fair policy in the matter and that this had been fully appreciated in Japan. Japan's extraordinary growth in population had brought her into the same class as Holland, that is to say a density of 376 per square mile. The question of overflow, was therefore most important. He characterized the California land bill as unwise and futile for if it succeeded in driving

out Japanese farmers, California would be deprived of a considerable part of her agricultural products and would thus face an increase in the cost of living. Moreover the law was useless because it might be evaded by various legal subterfuges. The Californians by means of repression and persecution were thus driving the Japanese into the position of law-breakers or hypocrites, to say nothing of the feeling of hostility that this course occasioned. The exclusion law would add to the humiliation of Japan and the movement in favor of depriving the Japanese American born of the right of citizenship was plainly a reactionary course. See JAPAN.

THE VATICAN. Much was written during 1920 in regard to the growing power of the Vatican in international politics, by far the most conspicuous feature of the new tendency being the reconciliation with France. By November diplomatic relations between France and the Vatican were in a fair way toward resumption. This was a complete reversal of French policy, which for two generations had been anti-clerical. It was explained, so far as France was concerned, by the practical needs of the hour, and in spite of the bitter feeling on the subject in the past, there was no general opposition to it. The Catholics were supreme in middle Europe and French policy in middle Europe required the means of coming to terms with them. France as represented by its press and government was anti-Bolshevist and the Catholic element in France was the stronghold of anti-Bolshevism. Some of the ablest French writers during the year instead of denying the charge that France was reactionary in her policy after the war, admitted it and gloried in it, saying that France stood as a great conservative force in Europe—that it was the centre of resistance and counter-revolution, and that, especially, it was the bulwark against Bolshevism and other dangerous forms of radical politics. France appeared to have become more anti-Bolshevist than she had been in 1919. For example, M. Clemenceau had signed an offer to feed Russia, but M. Millerand, had such a point come up in 1920, would certainly have taken a different stand. France in her anti-Bolshevist endeavors was trying to form a ring of states around Russia. Now in this the importance of Catholicism could not be over estimated. To present French policy, the good will of the Catholic elements in central Europe was indispensable. In Germany for instance, unity could well be prevented, and French aims realized, by the separation of the Catholic element in the South, and its alignment with the Catholic population of Austria. In short the various schemes of the dominant French political groups of 1920 intent upon the crushing of German power in the future by the prevention of German solidarity could best be realized by an accord with Catholicism. M. Maurice Barrès, a conspicuous representative of Catholicism and of a certain type of chauvinism, advocated the detachment of the Catholic states from Germany, though not their annexation to France. The French Ministry in 1920 sent representatives to Catholic ceremonies which a few years ago would have been officially ignored. The return of the two strongly Catholic provinces, Alsace and Lorraine, added to the many influences tending to revive Catholicism in France. Popular imag-

ination in France was much struck by the sanctification of Joan of Arc at Rome, and the public ceremonies and processions which followed in France tended to promote friendship for the Vatican. A report made to the French government by a committee of the Chamber of Deputies after considering this question of resuming relations with the Vatican, favored the immediate appointment of a regular ambassador to be followed within a year by the sending of a Nuncio to Paris, when the two governments should have come to agreement in regard to the choice of the person. France should continue her policy in the Near East of protecting Catholics, but in return must demand recognition by the Church of French official representatives there. France desired peace in Europe, and the high moral power of the Pope is exerted toward the same end. The resumption of relations, it was said, was necessary in order to coöperate for this purpose. It was not proposed that modification of present French legislation should result from the resumption of relations.

BOLSHEVISM IN THE LOW COUNTRIES. In Belgium during the first part of the year not much was heard of the danger of extreme radicalism. The Socialists had lost several seats in the by-elections. In Holland on the other hand there was much alarm over the danger from foreign agitators and it was believed that a number of strikes had been ordered by the International Communist bureau at Antwerp under instructions from Lenin. Holland tried to keep out foreign agitators by establishing a zone at her frontiers beyond which no one might pass except along specified lines on penalty of being shot. An anti-revolutionary bill was introduced June 2, which went further than the prevention of outward acts of violence and aimed at moderate Socialists as well as Communists. The Socialist party condemned this as a departure from Dutch precedent. Its introduction was followed by riots and strikes and there was some fighting in the streets of The Hague between the police and the rioters.

BELGIUM AND HOLLAND. A sharp difference of opinion showed itself in the early summer between Belgium and Holland in respect to access to the sea by way of the Scheldt and checked the progress of the treaty between the two countries which was reaching its final stage (May 26). On May 3, the Dutch presented a note to the Belgian government demanding exclusive jurisdiction over the Wieleingen channel which is the largest of the three passable channels of the Scheldt below the city of Flushing. Thereupon Belgium broke off the negotiations and referred the subject to the Chamber of Deputies which approved their action on May 26.

FRANCE AND BELGIUM. A military convention was concluded in the autumn between France and Belgium. It was generally applauded in both countries as a necessary measure of precaution against a new war on the part of Germany. Many pointed out that if such an arrangement had existed before the late war it would have prevented the great disasters that marked that war's beginning.

ITALY AND RUSSIA. An illustration of the attitude of the Italian government toward Russia is offered by the following incident: In September a committee of the Socialist group

in parliament waited upon the foreign minister Count Sforza and asked him directly when the Italian government intended to renew commercial relations with the Soviet government of Russia. The foreign minister replied that in the spirit of the government's declarations in parliament relations with Russia would be resumed as soon as possible, first, commercial relations and then diplomatic relations; that is to say, they would be resumed as soon as the conflict between the Poles and the Bolsheviks was ended. He added that the Bolshevik representative Woroski whom he characterized as a man of genius and a moderate Bolshevik would have been received as the representative of the Soviets with great cordiality in Italy but that unfortunately it had been learned that owing to illness he could not undertake the Italian mission and in his place had been nominated M. Litvinoff. The foreign minister declared that he had been unable to accept the nomination of M. Litvinoff, the Supreme Council at San Remo not having authorized the latter to enter any Allied state. The Socialist deputies called the foreign minister's attention to the attitude of France toward the Soviet government and to the nomination by that country of a delegate to General Wrangel. As for their own country they insisted upon the necessity of following a policy of pacification and friendship toward Russia. The minister declared that Italy had taken the lead of the other countries in this direction, having concluded, for example, the agreement of Copenhagen for the exchange of prisoners and having admitted a Russian steamship loaded with wheat. As soon as the Russo-Polish conflict was ended an agreement would be made with the Soviet government for a merchant marine service between Italy and the port of Odessa.

FRANCE AND THE REPARATIONS. The French papers professed an inability to understand the attitude of their Allies in the matter of reparations. They argued that a complete agreement had been reached by the Allies on the articles of the Treaty after long and serious discussions. Why then should there be any question of the execution of these articles? France naturally asked whether Germany was to make good the damage that she had deliberately inflicted on France. The Allies seemed to bring this point into question. Were the Allies intending to pass over the 33,000,000,000 francs that France had already advanced to the Germans for the reparations, and all the other billions that it would still be necessary to find before the victims of German barbarism were indemnified? The French could not understand according to their newspapers. Why their Allies showed this excessive mildness toward Germany. The money question was important but still more important for the future was the subsistence of good-will between France and her Allies. If a secret hostility developed between them, the peace of the world would soon be broken. It was time to appeal to the opinion of the peoples on this subject. England had emerged from the war greatly increased in power. She was in the largest degree responsible for holding Germany to her word. Now if the old policy of England which aimed at keeping the Continent in a state of weakness and preventing France from becoming a strong nation should be carried out it would lead to disaster. Probably that

policy was not approved by the majority of the English people. Things had changed since Napoleon's time and France had become the least imperialistic and the most pacific of the nations. She had shown her good-will liberally toward England in not interfering in any way with British interests or even British ambitions. England had taken everything she wished in Africa and in Asia without any opposition on the part of France. England had acquired enormous booty and France had consented to everything, even to paying, by the convention of Spa, a price for coal that was very profitable to her. France had shown in this instance and in many others her willingness to sacrifice herself in order to live on cordial terms with England. But in the matter of the reparations the very existence of France was at stake and France could not accept demands that would tend to her ruin. The friendship of France and England was the sole effective safeguard of peace. It should be remembered that after all France was the chief victim of the war. Why should the reparations which had been agreed upon and which should be recognized as legitimate be called into question? It behooved the English people to reassure France in regard to England's intentions. A serious misunderstanding had arisen and it should be removed as soon as possible. France had acted with good-will and unselfishness when English interests had been involved. Now it was a question of the essential interest of France which required merely the respect for obligations deliberately incurred and based on the most elementary justice. France appealed to the British people to recognize her right. It would be dangerous for the British as well as for the French if the former should cease to cooperate with France because in that case France would have to insist that Germany pay her debt and in the event of a refusal would have to go and take the money wherever she could find it.

The French argument in respect to the financial condition of Germany as compared with that of France appealed to a report on that subject which had been submitted to the League of the Nations. From the figures supplied in that report it seemed that the percentages of receipts to expenditures in the budgets for 1920 for Germany, France, Belgium and Italy were as follows: 53.5% Germany; France, 44.6%; Belgium 42.8%; Italy 42.5%. The only budgets that showed no deficit were those of Great Britain and Czecho-Slovakia, all the other countries of the Allied and associated Powers showing a deficit. The deficit of France as shown by the above figures was 10% higher than that of Germany. The following figures showing the per capita revenue expenses of France and Germany were cited: France, internal revenue per capita \$265; Germany, \$103. France per capita expenses \$108; Germany, \$23; thus the comparative percentages were France, 40% and Germany 23%, the excess of internal revenue over expenses being therefore, 17% higher in Germany than in France. Finally as to the burden of taxation: The debt in 1913 in France was 33,000,000,000 francs or 868 francs per capita and in Germany 5,000,000,000 marks or 83 marks per capita. The debt in 1920 in France was 219,000,000,000 or 5,773 francs per capita and in Germany 197,000,000,000 marks or 3,346 per capita. From this the French argued that if the respective countries applied all their

annual resources to the payment of their debts. the German empire would require seven years to extinguish its debts, while France would require ten years. Hence, it was argued that Germany showed bad faith in her outcry of poverty. She had suffered less than France and it was inadmissible that the League of Nations founded on the principles of right and justice should maintain a policy which injured France in the interest of a criminal and conquered Germany. Moreover, the bad faith of the Germans was shown by the frequent threats on the part of the press and German public men, that they would never execute the Treaty. The reactionary element in Germany had declared that its execution was illegal because Germany had been compelled to sign it. Much had been published in Germany to the effect that the Germans were not bound by any engagement in respect to it. The Pan-German press was constantly exciting the people to thoughts of revenge. As illustrations of German sentiment many intemperate articles from the German press were shown, including one in which German conditions of the present time were likened to those after the peace of Tilsit. Just as it required only six years after the defeat of Prussia for her to regain her power in the great battle at Leipzig, so the recuperation and vengeance of Germany would not require a long interval now. It was hinted in various articles that the limitation of Germany's military force need not prevent military preparations; that the training of troops could go on clandestinely and an army might be prepared, for example, under the guise of a police force.

Many items appeared in the French press, illustrating the hostility of Germany to France. It was said in November that an anti-French campaign had been long carried on in order to stir up the people. An incident described as serious was reported in French dispatches. According to these a member of the French consulate at Hamburg was attacked on the street and wounded. The consul-general of France demanded retribution and this demand was supported by the French ambassador at Berlin. Publication of this incident led to a summing up of French grievances against Germany. It was said that it would be a mistake to assume that Germany was ready to execute the Treaty in good faith. An affair similar to that at Hamburg had occurred at Breslau and it was a question whether the French representatives were safe in the German empire and whether France ought not to take extraordinary measures to protect them. The punishment of the offenders in the affair at Breslau had evidently had no deterrent effect upon the population of Hamburg. There was plainly an outbreak of hatred against France as well as a systematic campaign against the Treaty and this was not only the work of Pan-Germans and irresponsible politicians; the ministers themselves employed intemperate language and prominent financiers took part in the campaign of hate. When Helfferich had predicted an early revenge, he was applauded by the crowd. Evidently the people were regaining their courage and the period of depression which had succeeded the defeat had come to an end; the Germans were realizing that their country was the most populous and the best organized in central and eastern Europe. At the Nationalist Congress, a speaker had declared that the German people would have a third revival of youth and

that the new empire would be stronger than in the days of Bismarck, in that it would include all the countries of the German race, eighty millions including those of Austria and Bohemia, which would constitute a powerful bloc to the 40,000,000 of Frenchmen. The French declared that this idea was stimulating Germany. Again it was believed there that France alone desired the complete execution of the Treaty. Acts counted and not words. The official declarations of the allied governments might be in agreement in respect to the necessity of enforcing the Treaty, but when the Germans saw that the discussions at Paris and London on the subject of reparations lasted a month before an agreement was reached they naturally concluded that the harmony between France and England was more apparent than real. And when they saw the British Government in the interest of British trade accept an arrangement that departed widely from the Treaty and renounced the punishment provided in case of failure to execute its provisions, the Germans had a still stronger reason to believe that France stood alone. This concession of England according to the French commentators placed a premium on German resistance. Germany was constantly hoping that the allies would fall out.

ATTITUDE OF FRANCE. The year closed with a strong feeling on the part of many French publicists that the efforts to secure the execution of the Treaty throughout the year had failed. Marshal Foch presented his report on German disarmament to the Allied ambassadors, December 31. He declared that Germany had not fulfilled her obligations either under the Treaty or under the Spa agreement. Although the German government had reduced the regular army to 100,000 as required and had dismantled all the fortresses that she had promised to dismantle, she had not kept faith in the matter of disarmament of the militia and the home guard organizations. He pointed to Germany's refusal a week before to disarm the home guards of Eastern Prussia and Bavaria. This, according to many French writers, was an open and direct violation of the agreement of Spa, and the Allies would therefore be justified in occupying the Ruhr valley. As to the general attitude of Germany toward the Treaty, M. Poincaré was winning much applause in certain quarters by his complaint of laxity on the part of France and her Allies in the matter of holding Germany to her promises. At the close of the year, he spoke of the twelve wasted months that had preceded. The Allies had been too good-natured and Germany had always taken advantage of them. When the treaty provisions were disregarded the Allies ought at least to have insisted upon the more indulgent terms of the Spa conference. Now, Germany was violating even the Spa terms. In spite of all the talk about disarmament, and in spite of the real desire of France to see the terms of military service shortened, it was impossible to disarm if Germany were left free to prepare new attacks under cover of the darkness. So long as Germany did not disarm, there could not be general disarmament. This had been clearly understood, and had been proclaimed at all the conferences, but the Allies had listened to the complaints of Germany and made concessions. Germany continued to ask further concessions. Hardly had the articles of peace been signed, including the one

that provided for the reduction of the German army to 100,000 men and the other that said the police forces must not be greater than in 1913, except in proportion to increased population than ingenious organizations sprang up in Germany for police, gendarmes, and civic guards which were merely military forces in disguise. According to reports published at the same time in Berlin, the army had been reduced to 90,000 men and the armed police force was below the limit required. On the other hand, it appeared that the civilian guard numbered hundreds of thousands. Although it had outwardly ceased to exist in Prussia, it was secretly maintained under various forms, such as clubs and sporting societies, and in Bavaria it was recruited in defiance of the Allies. In Germany, there was much protest against the reduction of the forces on the ground that Germany would thus be deprived of the defense against the Bolsheviks.

ANGLO-FRENCH FRICTION. During the closing months of 1920 the press of all the Allied countries gave much space to discussion of the differences in policy between France and Great Britain. The cardinal points concerned their attitude toward the Russian Soviet government and toward Poland. The French point of view may be briefly summed up as follows: England, after 40 years of a more or less hostile policy toward France, as was indicated by the incident of Fashoda in 1898 and many other circumstances formed with her in 1904 the famous Entente Cordiale at a time when Great Britain felt herself in danger by the world policy of the Emperor William. On the outbreak of the war this understanding was transformed into a war alliance which in turn became at the end of the war an alliance for peace. Now, it was generally admitted that the war had practically ruined France and that peace had especially enriched the British Empire. Again it was also certain that a thorough understanding between France and Great Britain would suffice for the maintenance of permanent peace in Europe whether with or without a League of Nations or the United States or Russia. But it seemed inevitable that a British government on becoming more and more powerful and free from the maritime and colonial competition of Germany would tend to contravene certain interests of France. After 1916, in spite of the war alliance, the British Empire without the knowledge of the French had entered into a long series of arrangements profitable to it and injurious to France. Under Lloyd George this policy had been carried to its furthest limit and had become actually hostile. For example, English munitions were supplied to the rebels of Cilicia; English instigation roused Feisal against France; English plots sacrificed Poland whose welfare was necessary to French security; English pretensions reduced the just compensation; and English capital worked against France in Silesia. Then as to Bolshevism which was a flat denial of right, of good sense, and of civilization, Lloyd George by an obscure understanding and through the influence of Jewish financiers had attached himself to the Soviet Government. The French government had positive and detailed information in respect to this relation. For example, Great Britain had promised Judenitch to support him on the left flank by occupying Kronstadt and a part of the coast but she had evacuated all these positions at the approach of the

Reds. Thus Poland was left exposed, Judenitch was beaten and Lenin was saved.

As to the United States, experience had shown that no reliance was to be placed upon permanent support from that quarter because American diplomacy depended too much on mere internal party rivalries. Nor could Great Britain be regarded in the long run as a permanent force. The very existence of the British Empire was at present in question. It was at least reasonable to consider the possibility of its decay during the next 50 years. The French so-called empire, on the other hand, was not threatened. So long as the French should hold the Rhine, which they had a right to do alone, so long as Eastern Europe should be closed to the Soviets, which could be insured in part by French action against Berlin, Germany would grumble but would not dare to stir. Association with England on the Rhine and in Poland would hamper French efforts whereas an understanding with Belgium, Luxembourg and Spain together with a progressive development of French economic resources and her military strength might bring results more satisfactory and less costly. At all events the interest of France must come first and not a fantastic notion based on British pretensions. The course of Millerand was based on these realistic views. It implied that France ought to follow a distinctly French policy and oppose any anti-French tendency no matter what its origin. In short, events since 1916 had shown that it was not possible for France to bind herself by a policy of common interest with Great Britain. The only agreement possible would be one that consisted of specific understandings formed from time to time in relation to the definite purposes that developed. To be sure, nothing should permit the possibility of misunderstanding with Great Britain. The policy of Lloyd George appeared to lack good will. Nevertheless a nation of 90,000,000 inhabitants disposing of an immense colonial empire having rich deposits of iron and other minerals could certainly resist every anti-French policy in Europe from whatever source it came. It was safe to say to the British Premier that France had had enough of concessions and that she intended to apply the treaty of Versailles with the English if they wished but without them if their selfishness obliged her to do so. This was the policy of M. Millerand as interpreted by a considerable body of French opinion and to it was attributed his diplomatic victories over Great Britain.

The above summary is a fair example of the attitude of many prominent French publicists and doubtless represented the point of view of the class that dominated French policy after the close of the war. That it did not represent several important elements in French society was evident but for some reason their criticisms were not generally cited in the American Press.

A part of the British press carried on a systematic campaign against the policy of the French government. In the first place it insisted upon a reconciliation with Germany. It published articles indicating that France aimed at the economic destruction of Germany and that France was embarked on an imperialistic career that was the most audacious that had been known since the excesses of Pan-Germanism. It declared that Europe was covered with French military missions; that Poland had been ruined

as a result of French encouragement; that peace had been made impossible in Russia by French support of Wrangel; that Hungary had become a French military outpost; and that as a result of the Franco-Belgium agreement, the safety of England was in danger in that quarter. The French replied to this that French imperialism was an invention of German mendacity; that instead of having driven Poland to ruin, France had saved the people in their moment of peril from being crushed by Russia and Germany for if France had not aided the Poles in their resistance, the Red armies would have occupied Warsaw. France had saved western Europe at that crisis, for with Warsaw once under Red control, Bolshevism would penetrate throughout all Europe. In recognizing the government of Wrangel, France was following the only reasonable attitude for nations that wished international relations to be based on right. If Bolshevik Russia were not checked, the most elementary principles of civilization would cease to be respected in the dealings between nations. As to Hungary, the alleged motives of French diplomacy in Hungary had been formally denied and as to the Franco-Belgian agreement its purely defensive character had been proclaimed by both parties to it. It was formed in order to withstand in the future any new aggression. Nor was it the fault of either France or Belgium, that England had not been willing to take part in the measures undertaken by France and Belgium for the common defense of the west against such attacks as those of 1914. These criticisms of France were all dismissed by the French press as part of a systematic campaign against her, falsely based on desire for peace, while actually tending to compromise peace measures that had been taken. In a British paper renunciation by the British government of its rights to seize the property of Germans was defended and it declared that France in occupying Frankfurt, recognizing Wrangel and pursuing her Polish policy, had taken a menacing attitude. It also said that after the conference at Spa it had violated both the letter and the spirit of the agreement reached at San Remo. The paper went on to say that the Entente would break up at an early date and possibly before Christmas for if France assumed the right to act according to her own inclinations, she could not refuse the same right to England. These points are quoted simply to indicate that in both countries strong efforts were being made by certain elements to stir up hostilities between the two governments. Eminent publicists, especially in France, expressed extreme views. For example, the makers of the Treaty according to Lauzanne were eternally disgraced because there had not been included penalties insuring the execution of the terms and M. Millerand deserved everlasting credit for his attempt to complete it in this respect. It was absurd that a Treaty should contain 222 pages of demands and only a page and a half on the measures for the enforcement of those demands. French policy was at present engaged in creating the necessary sanctions. At the convention of Spa it had created a sanction in respect to coal and the result was that Germany delivered the coal. That is what sanctions meant and they had been completely forgotten in the Treaty. It remained to be seen what penalties would be agreed upon in the approaching meetings at Brussels and Geneva for the failure to

keep the financial terms. The Germans would pay if they knew that in case of non-payment certain measures would be taken against them such as the occupation of Essen, the seizure of the customs, etc. In other words if the Allies should proceed in the matter of financial reparations as they had proceeded at Spa in respect to coal, France would secure some portion of the booty, but if they proceeded as they did at Versailles and only made phrases, France would get nothing more than a shadow.

GREAT BRITAIN AND GERMANY. Liberal opinion in England was distinctly in favor of the programme of restoration and reconciliation for Germany. In more or less conservative quarters there was a disposition to agree that it was to the best interest of the Allies to follow a moderate course in the matter of indemnity. It was clear that the French and British should stand together and it was also clear that the terms of the Treaty should be enforced. Although Mr. Lloyd George had frequently changed his mind in domestic politics his course in this matter was generally regarded as consistent. While the French showed a preference for military means in insuring the Treaty, Lloyd George and the Italian prime minister believed in methods of diplomacy, and had worked out plans, for the adjustment of differences with Germany by peaceful means. In the matter of the coal question the Allies pointed out to Germany that she had failed to comply in regard to disarmament and in regard to the reparations generally, and at the conference of San Remo they framed this declaration and included in it the statement that the Allies did not ignore the difficulties with which the German government are faced and did not intend to insist upon the literal interpretation of the Treaty. Furthermore they invited the head of the German government to confer directly with the heads of the Allied cabinets. Mr. Lloyd George had been behind this policy and in inducing the French minister to meet the German minister he had done much toward restoring normal relations. Moderate British opinion argued that after all the war had ended and Germany had signed the Treaty. They urged her inability to carry it out literally and punctually. The British government was willing to examine that plea and see what could be done. As to the indemnity so long as the amount was left indefinite, Germany had an excuse for saying that she did not know what to do about it. The Allies for their own sake would do well to fix the amount definitely as soon as possible. Germany could adjust her internal conditions to meet this necessity. Generosity in the treatment of a vanquished enemy was not in the long run unprofitable to the conquerors. The above comment fairly represents moderate British opinion as indicated in the press at the time of the San Remo conference in May, and in general the same spirit continued throughout the year.

In December, 1919 a White paper was published saying that the money due to or the property acquired by the Germans as a result of transactions following the authorized resumption of commercial relations were not subject to sequestration in England. On October 8, 1920 the British embassy at Berlin repeated this engagement and reassured the Germans that from that moment the only thing

demanded of them would be to make an honest effort to pay their debts. In that case complete immunity was assured them in respect to their deposits in bank or their goods in Great Britain. On October 21, the Board of Trade published the information that the government of Great Britain had informed the German government that it had no intention of exercising the right conferred upon it by paragraph 18, Annex II of the eighth part of the Treaty, to seize the property of Germans who left the United Kingdom, in case of voluntary violation of these obligations by Germany. In France this policy was condemned as encouraging the Germans to resistance in the matter of indemnity. It was pointed out that the German press was saying that German commerce was not in any danger. On the occasion of the fair at Frankfort, purchasers came to Germany from all countries and during the months of April and May the excess of exports was very considerable. For months Germany had ceased to publish statistics of products and exports. Finally the government decided to publish statistics for the whole of 1915 and the first five months of 1920. These showed the excess of exports in April to have been 576,000,000 marks and for May, 1,100,000,000 marks. According to French commentators, this proved that Germany was in a position to pay her debts. Indeed, some of the German newspapers condemned the government for publishing these figures on the ground that it played into the hands of those who wished to press for payment.

OCCUPATION OF THE RHINE. In the autumn several German newspapers conducted a campaign in regard to the cost of the army of occupation on the right bank of the Rhine, with a view to relieving Germany of part of the burden. The French Finance Minister in the autumn published figures showing the expenses that France was obliged to pay. The total contribution to the support of the army of occupation on the part of France amounted to 1,800,000,000 francs. The installments paid by Germany for reimbursement amounted on July 31, only to 402,813 francs. Certain German papers however, added to this figure very large sums spent by the German government for indemnification of its own people on account of requisitions, etc., resulting from the occupation. Many instances of French requisitions were cited by these German papers, notably at Kaiserslautern, with a view to proving that the French occupation was an intolerable burden upon German finances. There was no opportunity during the year of determining the right of this matter, since the German charges as published in the press were not accompanied by proof and since the answer of the French was simply a flat denial, also unaccompanied by convincing information.

FRENCH-ITALIAN FRICTION. In spite of the interview between the French and Italian premiers at Aix-les-Bains, there was much criticism of French policy on the part of the Italian press. In general the French Russian policy was condemned and there was a tendency to insist on easier terms for Germany. Moreover, the so-called Little Entente among the Balkan states was approved by the Italians as a check on the French designs. In France this criticism was attributed to Italy's disappointment in the terms of peace and to the serious economic crisis that

she was undergoing. In spite of the overthrow of her hereditary enemy, Italy was much dissatisfied with what the peace had brought her. Moreover, there was a political crisis resulting from the acknowledged necessity of modifying and simplifying organs of administration, financial methods and the electoral system. Then the economic crisis, due in the first instance to the disorganization of the ratio of production to consumption, to the lack of agricultural resources and to the failure of raw materials for manufacture, which was all the more serious as the result of lack of means of transport and the reduction of emigration. Finally there was the enormous increase in the cost of living. These elements which had marked the history of the year 1919 had given impetus to the more radical movements and the Chamber elected November 16, 1919 was a distinctly radical body. The dominance of this class did not tend to cordial relations with countries in which, like France, the more conservative classes were in control. But while the French attributed the Italian attacks upon them to these causes in part, they saw no reason for the violence of these attacks and did not admit their justification. The main grievances against France according to Italian writers were, in the first place, that France had emerged from the war enormously rich. She controlled in Europe the iron market and the market of chemical fats and to a certain extent the market for colonial raw material on account of her territorial gains in Africa. Italian industry in effect depended upon the good will of France. The French had occupied the coal fields of the Saar from which they granted to Italy only a small proportion and they would not relinquish the mines of Heraclea in Asia Minor. French policy paralyzed Italian industrial activity and deliberately drove Italy toward anarchy and ruin. A contrast was drawn between the new wealth of France resulting from the war and the poverty of Italy which was the direct result of French policy. To these attacks French writers replied that if they did not furnish cast-iron and steel to Italy it was because they required them in the reorganization of their own metal industries. Many of the French blast furnaces in fact could not operate on account of the lack of coke. France had the first claim naturally on her own products in order that she might bring the balance of trade in her favor. The restrictions on the exportation of phosphates, for example, were due to internal needs and to the difficulties of transportation. As to coal, it should be remembered that the coal fields in the north of France had been made unproductive for a long time to come by the Germans and the output was by no means equal to the needs. Instead of monopolizing the Heracleian basin, France as a matter of fact had granted Italy a right to take part in its exploitation. Moreover, France had sent a delegate to Rome to facilitate direct purchase by the Italians in her African colonies. The charge that France wanted to cause a social revolution in Italy by unemployment and famine would not bear examination. Moreover, in most cases commercial relations between the two countries were not under government control but pertained directly to the industrial groups concerned. The agreement at Turin, May 30, 1917, permitted Italian merchants and

manufacturers to export into France goods to the value of a billion francs although French producers had sent to Italy goods to the value of only some hundreds of millions. France was thus the best customer of Italy and had contributed toward the lowering of her rate of exchange. Again France had foregone 3 % of the German indemnity in favor of Italy. In these circumstances Italian criticism seemed unreasonable to the French. It continued, however, without abatement during the year.

ITALY AND GERMANY. Anxiety was expressed in certain French quarters lest Germany and Italy should be drawn together in a commercial alliance and there was much talk about the intention of Germany to secure economic control over Italy. An interview with the German ambassador of Italy published in November presented some of the points from the official German point of view. Germany, according to the ambassador had no desire to penetrate the economic life of Italy, but only to cooperate with it. But the question in Germany was how to reconstitute her own economic life, and she was obliged to think of her own obligations—the delivery of great quantities of coal and the payment of her indemnities. The peace conditions had deprived Germany of the very basis of her industries. Germany to-day was a totally different country from what she had been. She was poor in all raw materials and in money. The work of economic penetration in Italy or in any other country was impossible to her, even if she wished to engage in it. Germany knew very well that such a policy would be ruinous.

Many Germans began to return to Italy after the armistice and their number was said to be increasing in 1920. Among them were persons prominent in industry, commerce and finance, also Church dignitaries, aristocrats and many persons of the middle class. The newspapers referred to this influx of German pilgrims and in the French press it was regarded with suspicion as indicating a pro-German tendency on the part of the Italians. The Germans were very numerous in the north, especially in Milan and Genoa. Writers and journalists were said to form the largest element. Moreover all were received by the Italians as if nothing unpleasant had occurred, and although at first many of them had passed themselves off as Swiss they now took pride in declaring themselves Germans. Certain Italian papers expressed some concern over this immigration and warned the public against a design on the part of the German government to repeat her past error and endeavor to invade anew the industries in Italy. In certain quarters the fear was expressed that in a few years the Italian market would again be flooded by German goods. At present a large number of commercial travelers were seen displaying their wares in Italian streets. Meanwhile they were not neglecting the political side and were constantly carrying on propaganda in favor of Germany. One Italian newspaper declared that the merchandise offered by Germany was not only of a better quality than the Italian, but was delivered under very advantageous conditions as compared with that offered by the French and English, the Germans accepting easy terms of payment. A large credit establishment at Rome announced in the autumn that two German

bankers had been called to direct a branch which had been opened. It was feared by some that the time was not far distant when Italian finance would be under German domination. It was significant that Germans were already placed at the head of an important Italian bank.

WARRE, EDMOND. Former headmaster of Eton College, England, died at Eton, January, 22. He was born Feb. 12, 1837; studied at Eton; graduated at Oxford with honors; became assistant master at Eton in 1860; was elected headmaster in 1884, and held that office till his resignation in July 1905. He was celebrated for his extraordinary memory which enabled him to quote with ease from classic authors on almost any subject. As an administrator he was autocratic but kindly and he made an especial effort to develop public spirit among his pupils.

WASHINGTON, D. C. See CITY PLANNING.

WASHINGTON. POPULATION. According to the preliminary report of the census of 1920, there were 1,356,621 residents in the State January 1, 1920, as compared with 1,141,990 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 66,288, an increase of 18.0 per cent since 1910. The following table was compiled from the estimates of the United States Department of Agriculture for the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	78,000	2,808,000	\$3,510,000
	1919	78,000	2,808,000	5,195,000
Oats	1920	823,000	15,052,000	10,837,000
	1919	824,000	12,960,000	12,053,000
Barley	1920	110,000	3,883,000	3,883,000
	1919	117,000	3,510,000	4,738,000
Wheat	1920	2,329,000	37,982,000	51,276,000
	1919	2,441,000	39,305,000	84,113,000
Hay	1920	844,000	1,659,000	30,360,000
	1919	845,000	1,986,000	45,468,000
Potatoes	1920	56,000	8,680,000	8,246,000
	1919	58,000	7,250,000	10,512,000

^c Tons.

MINERAL PRODUCTION. The value of the gold, silver, copper, lead, and zinc produced from mines in Washington in 1920, according to the estimate of the United States Geological Survey, was about \$1,193,000, an increase of \$224,039 over that in 1919. The decrease in the value of the gold and silver was more than offset by the increase in that of the copper, lead, and zinc. The output of copper from the Chewelah district, Stevens County, was slightly less, but there was an increase in the output from Snohomish County. Most of the ores except those of lead and zinc were smelted at Tacoma, Wash. The mine production of gold decreased from \$252,862 in 1919 to about \$142,000 in 1920, a decrease of nearly 44 per cent. Nearly all the gold came from the Republic district, where the shipments of ore were comparatively few. From this district approximately 10,200 tons of siliceous ore was shipped during the year, as compared with 25,537 tons in 1919. The mine output of silver decreased from 259,384 ounces in 1919 to about 193,000 ounces in 1920. The value of the output decreased from \$290,510 to about \$210,000. Most of the silver was obtained from copper ores and from ores mined in the Republic district. No silver ores were either shipped or treated. The mine output of copper increased from 1,676,576 pounds in 1919 to about 2,394,000 pounds in 1920, and the value of the output increased from

311,843 to \$409,000. The mine output of lead increased from 2,146,157 pounds in 1919 to about 5,079,000 pounds in 1920, and the value from \$113,746 to about \$415,000. Most of the product came from the Electric Point property near Northport, in Stevens County, the shipments from which were greatly increased. In the same district much lead ore was opened in the Gladstone mine, from which several shipments were made during the year. Several hundred tons of zinc ore were shipped from the Northport district in 1920. No large output of zinc ore had been made since 1917.

FINANCE. The Treasurer's statement for the biennium ending September 30, 1920 was as follows: Balance on hand, Oct. 1, 1918, \$5,370,697; gross receipts during biennium, \$43,240,707; gross disbursements, \$42,953,825; balance on hand, September 30, 1920, \$5,657,579.

EDUCATION. For the year ending June 30, 1919, 272,325 pupils were enrolled, the average daily attendance was 197,595, and the number of teachers employed 9,770. The total enrolled in high schools was 37,317 and the number of teachers 1,612. See **EDUCATION IN THE UNITED STATES**.

TRANSPORTATION. Of steam trackage the Northern Pacific maintains 2,966 miles, the Great Northern 1,798 miles, the Chicago, Milwaukee & St. Paul 1,138 miles, the Oregon-Washington Railroad and Navigation Company, or Union Pacific, 1,133 miles, and the Spokane, Portland & Seattle 512.41 miles.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 223,137; Cox (Democrat), 84,298; Christensen (Farmer-Labor), 77,246; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 183,388; Hughes (Republican), 167,208; Benson (Socialist), 22,800. The vote for governor was: Hart (Republican), 210,622; Bridges (Farmer-Labor), 121,371; Black (Democrat), 66,079; and for United States Senator: Jones (Republican), 217,069; France (Farmer-Labor), 99,309; Cotterill (Democrat), 68,488.

WASHINGTON, UNIVERSITY OF. A co-educational State institution at Seattle, Washington, founded in 1861. The enrollment for the summer session of 1920 (first term) was 1506, and for the regular fall session, 5191. There were 275 members of the faculty. The income for the year ending June 30, 1920 was: State appropriations \$1,133,978; local fees and tuitions \$464,917; Federal \$7746; other income \$46,880; total \$1,653,521. The library contained 120,530 volumes and 547 periodicals. The Philosophy Hall was completed at a cost of \$366,000. President, Henry Suzzallo, Ph.D., LL.D.

WASHINGTON AND JEFFERSON COLLEGE. A non-sectarian institution of higher learning, at Washington, Pa., founded in 1802. The enrollment for the summer session was 97 and for the regular fall session 408. The faculty numbered 22, including 2 new members. The productive funds amounted to \$1,000,000 and the income for the year was \$147,000. There were 31,214 volumes in the library. President, Samuel Charles Black, D.D., LL.D.

WASHINGTON AND LEE UNIVERSITY. A non-sectarian institution of the higher education at Lexington, Va., founded in 1749. The enrollment for the regular fall session was 695. There were 36 members in the faculty, includ-

ing 8 additions. The productive funds amounted to \$969,000 and the income for the year was \$190,000. There were 55,000 volumes in the library. An addition was made to the Department of Education, and a new dormitory was finished costing \$116,000. The McCormick family of Chicago gave \$200,000 toward the endowment fund. President, H. L. Smith, Ph.D.

WASHINGTON UNIVERSITY. A non-sectarian co-educational institution, at St. Louis, Mo., founded in 1863. The enrollment for the regular fall session of 1920 was 2520 and 1457 in the extension courses. There were 295 teachers on the staff. The approximate endowment of Washington University was \$9,500,000 and the value of grounds, buildings and apparatus was \$4,000,000. There were 176,013 volumes and 64,200 pamphlets. Two new buildings were to be built, a gift to the university. Chancellor, Frederic Aldin Hall.

WATER PURIFICATION. See **WATERWORKS**.

WATAHWASO, PRINCESS. See **MUSIC, Artists, Vocalists**.

WATERWORKS AND WATER PURIFICATION. Notwithstanding the fact that waterworks are one of the most vital of municipal improvements, much-needed enlargements and extensions, as well as improvements in the quality of the water being furnished, were still being held up by war and after-war conditions through the year. Engineering reports advising and outlining important water-works construction were made during the year for Philadelphia, Baltimore, Norfolk, Cleveland, Chicago, Kansas City and other cities. Contracts were let for the beginning of a portion of a dam on the new Wanaque River project for Newark, N. J., for a portion of a 350,000,000-gallon pumping and filtration plant for Detroit, Mich., and for a part of the new filtration plant for Sacramento, Cal. See **San Francisco**, under **MUNICIPAL OWNERSHIP**.

WEATHER BUREAU. See **METEOROLOGY**.

WELCH, DESHLER. Author, died Jan. 7. He was born at Buffalo, N. Y., July 20, 1854, and was a descendant of John Alden. In 1878-9 he was the editor of a Buffalo weekly. He founded *The Theatre* and edited it from 1884 to 1892. He was at one time business manager to Augustin Daly and he wrote dramatic criticism and stories for the press during many years. He was also European correspondent for several leading newspapers. His books include: *The Life of Grover Cleveland* (1887); *The Bachelor and the Chafing Dish* (1896); *The Story of Louise* (1901); *The Reincarnation of David Damien* (1900).

WELD, STEPHEN MINOT. Merchant, died March 15. He was born at Jamaica Plain, Mass., Jan. 4, 1842; graduated at Harvard, 1860 and served with honor in the Massachusetts volunteers during the Civil War. He was head of a large company of cotton merchants after 1875 and a director of other important enterprises.

WELLESLEY COLLEGE. An institution of the higher learning for women at Wellesley, Mass., founded in 1875. The enrollment for the fall session of 1920 was 1551. The faculty numbered 135. The productive funds of the institution amounted to \$3,540,883, and the income for the year from funds was \$144,145; and the income from all sources including tuition and residence charges amounted to \$1,154,242. There

were 92,000 volumes in the library. The college was to enter upon a campaign for a Semi-Centennial Fund for endowment and buildings with reference to the anniversary of the opening of the college in 1875. The only large gift was through the bequest of Mrs. Margaret Olivia Sage, which amounted to \$472,683. President, (Miss) Ellen Fitz Pendleton, Litt.D., LL.D.

WERTHEIM, JACOB. Jewish banker, died in New York City, Nov. 14. From humble beginnings he became the largest independent cigar manufacturer in the United States and was also prominent in the development of the automotive industry. He was born at Hartford, Conn., in 1850; went into the cigar business in New York at an early age and 1889 formed a firm whose business grew rapidly till with others it was consolidated into the United Cigar Manufacturers. Mr. Wertheim was president of the last named company till 1913 and in 1917 was elected the first president of the Tobacco Merchants' Association, a national trade organization.

WESLEYAN METHODIST CONNECTION IN AMERICA. This denomination grew out of the slave question in the period preceding the Civil War. It was founded at Unita in 1843, and barred from membership all persons connected with slavery, or in any way with the manufacture or sale of intoxicating liquor, and all persons who were members of secret societies. The latest available statistics are those of 1919, when there were 510 churches, valued at \$815,615; 205 parsonages, valued at \$251,915, and 521 Sunday schools, with 36,193 pupils and 2174 teachers. Membership in 1920 was 21,000, a marked increase over the 19,818 members reported for 1919. Foreign missions are conducted in Sierra Leone with 18 missionaries, and in India with 20 missionaries. The work in Japan, which was started in 1919, was considerably expanded during the past year. Home missions are maintained in Alabama, and among the Blue Ridge Mountains. A large part of this missionary work is conducted by the Woman's Home and Foreign Missionary Society. Colleges are maintained at Houghton, N. Y.; Central, S. C.; Miltonvale, Kan.; and a Theological School, Fairmount, Ind.

WESLEYAN REFORM UNION. See METHODISTS, WESLEYAN.

WESLEYAN UNIVERSITY. A non-sectarian institution for the higher education of men at Middletown, Conn., founded in 1831. The enrollment for the fall session of 1920 was 556 students. The students registered the year before were 595. The reason for the decrease was due to the fact that the Trustees in June voted to limit the number of undergraduates to approximately 500, and gradually a reduction was being made. The faculty numbered 56, of which ten were new members. The productive funds of the institution amounted to \$2,560,162, and the income for the past year was \$272,536. There were 121,000 volumes in the library. Through the endowment campaign \$2,250,000 were received of the \$3,000,000 sought. This was to be used for increasing professors' salaries, adding new departments, and very little if any for new buildings. President, William Arnold Shanklin, LL.D.

WEST, SAMUEL. British physician, died, March 2. He was born in 1848; educated at Oxford; studied at St. Bartholomew's Hospital

and at Berlin and Vienna. He was demonstrator of anatomy at Oxford and was in the faculty of the Royal College of Physicians, London, and held other teaching positions in medicine. He was consulting physician or officer of a large number of hospitals and other important institutions. He wrote *Diseases of the Organs of Respiration* (2nd ed. 1909); *How to Examine the Chest*, etc.

WESTERN AUSTRALIA. One of the states of the Commonwealth of Australia, extending from the Indian Ocean to the Northern Territory and South Australia; the largest of the states with an area of 975,920 square miles. The estimated population, Sept. 30, 1919, was 329,920 as compared with 327,162 in 1919. The males numbered 174,268, and females, 154,778. Capital, Perth with a pop. (including suburbs) estimated, Dec. 31, 1918, at 133,000. Executive power is vested in a governor who acts through a responsible ministry and legislative power in a parliament of two houses: The legislative council of 30 members elected for six years and the legislative assembly of 50 members elected for three years. Governor in 1920, Sir F. A. N. Newgate; Prime Minister, James Mitchell. See AUSTRALIA.

WESTERN RESERVE UNIVERSITY. A non-sectarian institution of higher learning at Cleveland, Ohio, founded in 1825. The enrollment in the summer school was 1214 and for the regular fall session, of 1920, 2058. There were 372 members in the faculty. The endowment funds amounted to \$4,074,039 and the income for the year from all sources amounted to \$10,719. There were 100,822 bound volumes in the library. President, Charles Franklin Thwing, LL.D., Litt.D.

WESTMOUNT, QUE. See GARBAGE.

WEST POINT. See UNITED STATES MILITARY ACADEMY.

WEST VIRGINIA. POPULATION. According to the preliminary report of the census of 1920, there were 1,463,701 residents in the State, January 1, 1920, as compared with 1,221,119 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 87,289, a falling off of 9.7 per cent since 1910. The following table was compiled from the estimates of the United States Department of Agriculture, for the years, 1919 and 1920:

Crop	Year	Acreage	Produc. Bu.	Value
Corn	1920	650,000	22,100,000	\$25,636,000
	1919	650,000	22,100,000	36,244,000
Buckwheat ..	1920	40,000	780,000	1,092,000
	1919	40,000	840,000	1,428,000
Oats	1920	200,000	5,400,000	4,266,000
	1919	190,000	4,750,000	4,322,000
Wheat	1920	340,000	4,250,000	8,075,000
	1919	400,000	5,400,000	11,880,000
Tobacco	1920	13,000	*10,400,000	2,600,000
	1919	15,000	*10,500,000	5,250,000
Hay	1920	808,000	*1,010,000	24,360,000
	1919	784,000	*1,172,000	29,987,000
Potatoes	1920	57,000	6,840,000	9,234,000
	1919	55,000	4,950,000	8,662,000
Sorg'm Sirup	1920	5,000	*500,000	675,000
	1919	5,000	*500,000	670,000

* Pounds. * Tons. * Gallons.

FINANCE. Balance on hand, July 1, 1919, \$2,218,091; receipts during fiscal year, \$19,901,391; expenditures during fiscal year, \$19,570,122; balance on hand, June 30, 1920, \$2,549,900.

CHARITIES AND CORRECTIONS. The State institutions with number of inmates, or average

daily attendance in 1920 are as follows: State hospitals at Weston (1100), Huntington (771), Spencer (612), Welch (54), McKendree (24), and Fairmont (34); Tuberculosis Sanitarium, Preston Co. (149); Colored Tuberculosis Sanitarium, Denmar (51); Penitentiary, Moundsville (892, Oct. 1, 1919); Industrial School for Boys, Grafton (376); Industrial Home for Girls, Industrial (94); Children's Home, Elkins (27).

LEGISLATION. The official summary of the extraordinary legislative session in 1920 is as follows: The Legislature was called into extraordinary session on February 27, 1920, by a proclamation issued by the Governor on February 20 to consider and act upon the following subjects: *First:* To consider and enact legislation dealing with the high cost of living. To make the taking of excess profits on the necessities of life a misdemeanor and to fix penalties for the violation of the provisions of such statutes as may be enacted on the subject.

Second: To authorize the Independent School District of Ravenswood to erect a new school building and to level a tax or a bond issue sufficient for that purpose.

Third: To amend the charter of the City of Charleston relating to the paving of its streets and alleys.

Fourth: To amend the charter of the City of Martinsburg relating to paving and sewage and the method of paying for same.

Fifth: To consider and ratify the amendment to the Constitution of the United States, extending the right of suffrage to women and to pass all appropriate legislation making the same effective in West Virginia for all purposes.

Sixth: To amend, if deemed advisable, the corporation laws of the State to allow the issue of non-par stock and to fix the basis of the tax on same.

Seventh: To make necessary appropriations of public moneys to defray the expense of the special session.

The legislature assembled at the capitol in the city of Charleston on Friday, February 27, pursuant to the Governor's call, with a quorum of both houses present, and remained in session until Thursday, March 11. The subjects mentioned in the second, third, fourth, fifth, sixth and seventh items of the call were acted upon favorably; no legislation was had upon the first item, nor was any act passed making the suffrage amendment effective in West Virginia.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 282,007; Cox (Democrat), 220,789; Debs (Socialist), 5618; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 143,124; Wilson (Democrat), 140,403; Benson (Socialist), 6150. The vote for governor was: Morgan (Republican), 242,327; Koontz (Democrat), 184,762; Montgomery (Non-Partisan), 81,330; Holt (Socialist), 2695.

OFFICERS. Governor, John Jacob Cornwell; Secretary of State, Houston G. Young; Auditor, John S. Darst; Treasurer, W. S. Johnson; Attorney-General, E. T. England; Superintendent of Free Schools, Morris P. Shawkey; Commissioner of Agriculture, James H. Stewart.

JUDICIARY. Supreme Court: President, L. Judson Williams; associate judges, George Poffenbarger, Charles W. Lynch, William N. Miller, Harold A. Ritz.

WETHERBEE, GEORGE. British-American artist, died, July 23. He was born at Cincinnati, Ohio, in December, 1851 and was educated at Boston. He traveled extensively on the continent and lived for some time in the West Indies. He was a member of the Royal Academy in England and of the Royal Academy of Arts at Antwerp.

WHALING. See FALKLAND ISLANDS, DEPENDENCIES OF.

WHEAT. Available data as to the yield of wheat in 1920 were still insufficient for definite estimates of the world's production, such as were annually given out before the war. The information at hand did not indicate a marked improvement in the world's wheat situation over that of 1919. Data published by the International Institute of Agriculture, Rome, for a group of countries representing about 60 per cent of the world's yield, showed a decrease of nearly 9 per cent in acreage and an increase of less than 1 per cent in production as compared with the preceding year. The acreage and production of these countries for 1920 were also slightly under the average for the years 1914-1918, inclusive. The same authority gave the 1920 production of wheat in Belgium, Bulgaria, Spain, Finland, France, Wales, Italy, Netherlands, Sweden, Switzerland, Guatemala, British India, Japan, Algeria, Egypt, and Tunis as 1,050,433,000 bu., or 11.1 per cent above the production of 1919 and 1 per cent below the average production of the 5-year period 1914-18.

The 1920 production in Prussia was given as 47,441,000 bu. or 3.2 per cent above the 1919 crop and in Czecho-Slovakia as 24,437,000 bu. The *Corn Trade News*, London, placed the wheat production of Germany in 1920 at 88,000,000 bu., or over 8,000,000 bu. above that of the year before. In British India, where the harvest begins in March, a record crop of 376,880,000 bu. was produced, as against 280,485,000 bu. in 1919. The Canadian yield of 1920 was given as 284,234,000 bu., or over 50 per cent above the yield of the preceding year. Over half of the Canadian crop is grown in the Provinces of Manitoba and Saskatchewan. No authentic reports relative to the great wheat-producing areas of Russia were available.

The wheat crops of Argentina and Australia, in 1920, where the harvest ends early in the calendar year, fell below the combined production in 1919. The yield in Argentina was placed at 214,000,000 bu. as against 212,800,000 bu. in 1919, and that of Australia at only 47,104,000 as against 75,146,000 bu. the year before. In 1917, the Australian crop was more than 150,000,000 bu.

As estimated by the Department of Agriculture, the United States, in 1920, produced 789,878,000 bu. on 57,412,000 acres or at the rate of 13.7 bu. per acre, while the year before 934,265,000 bu. were produced on 72,308,000 acres, the average rate per acre being 12.9 bu. While the acreage in 1920 showed a large reduction as compared with the preceding year, it was still above the average for the 5-year period 1914-1918 by 3,293,000 acres. The year was marked by an excessive shrinkage in the market price of wheat, which meant heavy losses to the producers after a season of exceptionally high costs of production. The average farm value on Dec. 1, 1920, was only \$1.44 per bushel, as compared with \$2.15 the year before. Based on these prices the total value of the 1920 crop was \$1,140,206,000 and of the

1919 crop \$2,009,407,000. The total value in 1920 was nearly \$60,000,000 below the average for the 5 years 1914-1918. Of the area in wheat this year, 37,993,000 acres were winter wheat and 19,419,000 acres were spring wheat. The yield of winter wheat was 580,513,000 bu. and of spring wheat 209,365,000 bu. The average yield of winter wheat was 15.3 bu. and of spring wheat 10.8 bu. per acre, both yields being below the 5-year average. The area sown to winter wheat in the fall of 1920, for the 1921 crop, according to a preliminary estimate, was placed at 40,605,000 acres or 97.2 per cent of the acreage sown the year before. By far the largest area in any State, 10,343,000 acres, was reported by Kansas, followed by Nebraska with 3,301,000 acres, and Oklahoma with 3,100,000 acres. Kansas in 1919 produced about one-fifth of the country's winter wheat crop, and North Dakota, Minnesota, and South Dakota about three-fifths of the spring wheat.

In the nine spring wheat States, Montana, Wyoming, Colorado, Nebraska, South Dakota, North Dakota, Iowa, Minnesota, and Wisconsin, 80 per cent is common wheat and 20 per cent is durum wheat. The most popular variety of hard spring wheat at present is Marquis, which makes up nearly 60 per cent of the total spring wheat area. A new variety of winter wheat, known as Kanred, originated by the Kansas Agricultural Experiment Station and generally well adapted to the climatic conditions of that State, is regarded as of high value. The variety was first distributed in 1914, and it was reported that 500,000 acres of it were grown in Kansas in 1920 and that approximately 3,000,000 acres were sown to the variety in the fall of 1920.

A survey made by the United States Department of Agriculture to determine the cost of production in 1919 showed that the average cost on 481 farms studied was \$2.15 per bushel.

WHEELER, SAMUEL H. Sewing machine manufacturer, died in Chicago, Ill., November 14. For many years his name was known as the chief partner in the Wheeler and Wilson Sewing Machine company. He was born in 1845 and established the Wheeler and Wilson company in 1894, becoming its president for eleven years.

WHITE, SINCLAIR. British surgeon and professor of surgery, died, August 8. After 1911 he was professor of surgery at the University at Sheffield and in 1909 was president of the British Medical Association. He was born in 1858; and was educated at Queens College, Galway. He became medical officer of health for the city of Sheffield and later practiced as a consulting surgeon. He wrote *Trade Diseases of Cutlers and File-Makers* (1894) and many contributions to the leading medical journals.

WHITELOCK, GEORGE. Lawyer, died, January 7. He was born at Baltimore, Md., Dec. 25, 1854; graduated at the Pennsylvania Military College in 1872; studied law at the university of Maryland, and later studied in Germany and at Johns Hopkins University; after 1876 he was in practice at Baltimore, the name of the firm being Whitelock, Deming and Kemp. He was prominent in many committees of legal revision and was the secretary of the American Bar Association after Sept. 1, 1909; he was a member also of other prominent legal associations. After 1908 he was the Maryland commissioner on uniform State laws and in 1913, he was a member of the commission appointed to frame

the Workmen's Compensation Act. In 1915 he declined appointment to the supreme bench at Baltimore.

WHITON, JAMES MAURICE. Editor and author, died, January 25. He was born at Boston, Mass., Apr. 11, 1835, and graduated at Yale in 1853. In 1865 he was ordained to the Congregational ministry, meanwhile having been the rector of the Hopkins Grammar school at New Haven for ten years. He was then for several years pastor in Massachusetts, New Jersey and New York City but after 1896 was on the staff of the *Outlook* in New York. He wrote extensively for the reviews and published various works on classical and religious subjects, including among the later ones: *Miracles and Supernatural Religion* (1903); *Interludes In a Time of Change* (1909); *Getting Together* (1915). He was a contributor to the *New International Encyclopedia*.

WILLIAM AND MARY, COLLEGE OF. A co-educational State institution at Williamsburg, Va., founded in 1693. There were 284 students enrolled for the summer session of 1920. For the regular fall session there were 180 women and 280 men. The faculty had 27 members. Four professors were added during the year. The endowment fund amounted to \$154,000. The remainder of the support was from State appropriation. The library contained 17,000 volumes. A new dormitory for women was under construction. President, Dr. J. A. Chandler.

WILLIAMS, GEORGE FORRESTER. Journalist and soldier, died on Staten Island, New York, December 31. He was born in Gibraltar in 1877, the son of a captain in the English army, and passed his childhood in the East and West Indies, and on the African Gold Coast. After the death of his parents, he came to New York, at the age of thirteen, penniless, and began work in a newspaper office. He then served in the Civil War for three years and during the last year was war correspondent, and also was war correspondent in Mexico in 1867. In 1870 he became managing editor of the *New York Times* and was subsequently on the *Herald*. He had charge of that paper during the "newspaper war," when the proprietor of the *Herald* succeeded in forcing the sale of the paper at a reduced price. He was afterwards on the staffs of the *New York World*, and *Recorder*. He wrote several books, among which may be mentioned: *Bullet and Shell*; *Unfair in Love and in War*; and *A Half-Century of New York Newspaper Life*.

WILLIAMS COLLEGE. A non-sectarian institution for the education of men, at Williams-town, Mass., founded in 1793. The enrollment for the regular fall session was 575. The faculty numbered 52. The income for the year was \$342,858. Gifts for the endowment fund amounted to \$534,765. The library contained 94,825 volumes. President, Harry A. Garfield.

WILLIAMSON, CHARLES NORRIS. British novelist, died at Bath, England, October 5th. He was among the first to make the automobile a feature of popular romantic fiction. He was born at Exeter and studied science and practiced engineering till the age of twenty-two. Early in his career he published a two-volume work on the life of *Thomas Carlyle* (1881). His success as a novelist began with *The Lightning Conductor*, an automobile romance written in collaboration with his wife who also collaborated in his other stories. Among subsequent tales

may be mentioned *The Princess Pasees; My Friend the Chauffeur; Lady Betty Across the Water; Scarlet Runner; The Car of Destiny; The Motor-Maid; Lord Loveland Discovers America; The Golden Silence; The Princess Virginia; The Love Pirate; The War Wedding* (1916) and *The Lion's Mouse* (1919).

WILLIAMSON, F. J. See PAINTING AND SCULPTURE.

WILKINSON, WILLIAM CLEAVER. Author, died, April 25. He was born at Westford, Vt., Oct. 19, 1833; graduated at the University of Rochester in 1857, and at the Rochester Theological Seminary in 1859, and after studies in France was ordained Baptist minister. After a few years of pastoral work he was a professor in the Rochester Theological Seminary in 1872-81. For the next 10 years he was engaged in literary work until 1892, when he was professor of poetry and criticism in the University of Chicago. A list of his writings is too long to be given here, but contains among the later works: *Wilkinson's Foreign Classics* (6 vols. 1900); *Poetical Works* (5 vols. 1905); *Modern Masters of Pulpit Discourse* (1905); *Some New Literary Valuations* (1909); *The Good of Life* (1910); *Daniel Webster* (1911); *Paul and the Revolt Against Him* (1914); and *Concerning Jesus Christ* (1919 and 1918).

WILSON, JAMES. Ex-Secretary of Agriculture, died at Traer, Ia., Aug. 26, 1920, at the age of eighty-five. He was born in Ayrshire, Scotland, Aug. 16, 1835, and came to this country with his parents in 1851, settling first in Connecticut and later in Iowa where he engaged in farming in Tama County. He was a member of the State Assembly for three terms, being Speaker for one term, and from 1873 to 1877, and again from 1883 to 1885 was a member of Congress. From 1870 to 1874 he was regent of the University of Iowa, and from 1890 to 1897 was director of the agricultural experiment station and professor of agriculture in the Iowa Agricultural College. In 1897 he was appointed Secretary of Agriculture under President McKinley, being retained by Presidents Roosevelt and Taft, and serving continuously in that capacity for sixteen years, until March, 1913. The period of his administration was one of remarkable development of the Federal Department of Agriculture, placing it at the head of institutions of its kind in any country. Its appropriations grew from approximately three and one-fourth million dollars to nearly twenty-five million, the working force from less than twenty-five hundred persons to nearly fourteen thousand, and the organization was greatly expanded. He made the Department indispensable to the farming people and to the nation. Not only were the practical features of the Department's work developed but its scientific investigation was greatly enlarged and its regulatory functions were expanded under such measures as the Food and Drugs Act, the Meat Inspection Law, the Plant Quarantine Act, etc., which were enacted in his time. Agricultural extension was started under the name of the Farmers Coöperative Demonstration Work, plant introduction on the basis of explorers sent to different countries of the world was inaugurated, durum wheat was introduced and established in the northwestern semi-arid regions, and plans for a systematic survey of the soils of the country were put into effect. The beet sugar industry practically grew up during his admin-

istration, measures were set on foot for the eradication of Texas fever among cattle in the South and bovine tuberculosis from dairy herds, and two outbreaks of foot-and-mouth disease of foreign origin were stamped out with vigor and dispatch. A definite forest policy was worked out and applied to the management of the national forests whose area increased until at the close of his administration they amounted to 185,000,000 acres. Increased Federal appropriations were secured for the State experiment stations, and stations were established in Alaska, Hawaii, Porto Rico and Guam. These and many other developments marked a career of unprecedented construction and made him one of the most notable figures in American agriculture.

WILSON, WOODROW. See UNITED STATES AND WAR OF THE NATIONS.

WINCHESTER, CALER. T. Educator, died March 24. He was born at Montville, Conn., Jan. 18, 1847; graduated at Wesleyan University in 1869 and studied in Germany. He was professor of English Literature at Wesleyan University after 1890 and lectured frequently throughout the country. He wrote *Some Principles of Literary Criticism* (1899); *Life of John Wesley* (1906); *A Group of English Essayists* (1910); *Wordsworth—How to Know Him* (1916); and he published *Courses of Reading* which were widely used.

WINDWARD ISLANDS. The group consisting of Grenada, St. Vincent, and St. Lucia, together with the Grenadines (which are one-half under St. Vincent and one-half under Grenada), forming the eastern limit to the Caribbean sea. Each island has its own administration, but they are united under a court of appeals and for certain other purposes. Governor and commander-in-chief at the beginning of 1920, Sir G. B. Haddon-Smith.

WINSLOW, JOHN BRADLEY. Judge, died, July 13. He was born in Livingston County, New York, Oct. 4, 1851 and graduated at Racine College in Wisconsin, 1871. He was judge of the first judicial circuit, 1884-91 and justice of the supreme court of Wisconsin after May 4, 1891, and chief justice after 1907.

WINTERHALTER, ALBERT GUSTAVUS. Naval officer died, June 5. He was born at Detroit, Mich., in 1856 and graduated at the Naval Academy in 1877. In January, 1900 he had risen to the rank of lieutenant commander and in 1905 he was commander, in 1909 captain, and in 1915 rear-admiral. He published in 1889 a report of the proceedings of the International Astrophotographic Congress in Paris. During the Spanish-American War he served on the *Philadelphia* (1898). He commanded a division of gun boats in the expedition to China, 1903. In 1915-17 he was in command of the Asiatic fleet and station with the rank of admiral. After May 11, 1917 he was a member of the General Board of the Navy Department.

WIRELESS TELEGRAPHY AND TELEPHONY. The year was notable for great advances in the application of radio apparatus to communication. New transmitting and receiving stations were built, constantly increasing use was made of radio facilities for the dissemination of press news and commercial messages and wide-spread investigation and experiment had brought radio telephony to such a degree of perfection that it was expected that the coming year would witness the beginning of its use on a

commercial scale in many localities. Wire-directed radio transmission was the term used to designate the employment of wire circuits such as telephone, telegraph, trolley or power lines for guiding or directing high-frequency radiations. By this means, communication between distant points with comparatively small power outfits was successfully maintained, without in any way interfering with transmission over such wire circuits.

What was said to be the most powerful radio station in the world was completed and put into use at Croix d'Hins, near Bordeaux, France, in August. High power arc transmission equipment and antenna towers 820 feet high were employed with generators of 1000 kw. capacity gave the station a regular sending range of more than 12,400 miles, quite equal to that at Nauen, Germany. This installation, that had been begun during the war by the United States navy at the suggestion and request of General Pershing, was named the Lafayette station and it was the intention to turn it over to the French government at an early date.

The equipment of the Nauen station was increased by the installation of a 400 kw. high frequency generator supplying single-phase alternating current that was stepped up to 24,000 cycles by stationary transformers. The antennas were supported on four masts, two of which were 858 feet and two 393 feet in height. By this additional apparatus, the sending range was increased to more than 12,000 miles.

The *Electrical World*, July 17, 1920, stated that the Radio Corporation of America was beginning the construction of what was designed to be the most powerful radio plant in the world, near Port Jefferson, New York, on the north shore of Long Island. Two 200 kw. machines were to be installed and the apparatus was designed with the idea of sending to and receiving from five different stations in other countries simultaneously.

Some of the most interesting and valuable results obtained with wireless apparatus were those of transmitting and receiving between ships and shore stations. During July, (*Electrical World*, July 31, 1920), satisfactory conversation was maintained between a station in New Brunswick, Canada and a ship more than 600 miles at sea. Between Santa Catalina Island, 30 miles off the coast of California and a land station communication was so successful that the American Telephone and Telegraph Company established and put into regular use public telephone stations. As another instance of the possibilities of radio transmission, it may be related that a test was made wherein Luisa Tetravini, grand opera prima donna, in New York City, sang a number of songs into a telephone instrument especially equipped for transmission to a number of ships of the United States navy in various ports and at sea. The receiving apparatus of the warships having been properly tuned to receive such radiations, the singer's voice was distinctly heard in the ships' telephones at distances up to 400 miles. One of the advantages of radio telephone transmission to great distances as contrasted with that by wire only was the preservation of the quality or timbre of a speaker's voice, which while faint, was not altered or distorted to any extent, thus retaining its personal, individual characteristics.

During the sessions of the International Com-

munications Conference in New York City October 21, a demonstration of the possibilities of wire-directed radio telephony was arranged and successfully carried out in which conversations between a ship 40 miles off shore in the Atlantic and another 30 miles off the Pacific Coast were plainly heard by members attending the Conference in New York. Radiations from each ship, picked up by the shore stations were transmitted by wire across the continent with comparatively small generating apparatus.

The thermionic valve, or heterodyne receiver, (see *WIRELESS TELEGRAPHY*, YEAR BOOK, 1918) came into practically universal use both as transmitter and receiver of electromagnetic waves. Applications of radio apparatus to position and direction finding for ships were numerous during the year. A cable was laid in the Ambrose Ship Channel entering New York Harbor and suitably connected with a radio shore station. During a dense fog, the master of an incoming vessel was able to follow his course correctly by means of radio detectors located on each side of the ship. By listening in on the telephone circuits connected with each detector, it was possible to determine the exact location of the vessel with reference to the cable by comparing the intensity of the sounds in the two telephones. In Canada, at Canso, Chebucto Head, near Cape Race, direction finding apparatus that had been erected during the war for the detection of air raids and the approach of submarines was put to use during the year as an aid to navigation; it being possible to give the master of a vessel in fog his true position (*Journal, Engineering Institute of Canada*).

WISCONSIN. POPULATION. According to the preliminary report of the census of 1920, there were 2,632,067 residents in the State, Jan. 1, 1920, as compared with 2,333,860 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 189,196, an increase of 6.8 per cent since 1910. The following table was compiled from the estimates of the United States Department of Agriculture for the years, 1919 and 1920:

Crop	Year	Acreage	Produce. Bu.	Value
Corn	1920	1,960,000	86,044,000	66,254,000
	1919	1,845,000	86,715,000	108,394,000
Oats	1920	2,408,000	107,878,000	52,860,000
	1919	2,348,000	78,423,000	54,896,000
Barley	1920	502,000	15,913,000	13,367,000
	1919	516,000	13,674,000	16,546,000
Wheat	1920	341,000	5,152,000	7,934,000
	1919	552,000	7,392,000	15,893,000
Clover Seed	1920	169,000	338,000	3,887,000
	1919	201,000	402,000	10,693,000
Rye	1920	483,000	7,728,000	10,046,000
	1919	527,000	8,327,000	11,075,000
Tobacco	1920	50,000	*62,400,000	10,162,000
	1919	48,000	*60,960,000	13,533,000
Hay	1920	8,189,000	*5,271,000	108,482,800
	1919	3,061,000	*5,275,000	104,008,000
Potatoes	1920	308,000	33,264,000	28,607,000
	1919	302,000	28,388,000	39,743,000
Sorgh'm St'p	1920	4,000	*300,000	540,000
	1919	3,000	*225,000	396,000

* Pounds. ° Tons. ° Gallons.

FINANCE. Balance, June 30, 1918, \$5,070,563; receipts for year ending, June 30, 1919, \$26,582,892; receipts for year ending, June 30, 1920, \$52,083,559; total receipts for biennium, \$83,737,014; disbursements for year ending, June 30, 1919, \$24,094,808; disbursements for year ending, June 30, 1920, \$48,047,486; total disbursements for biennium, \$72,142,294; balance, June 30, 1920,

\$11,594,721. The debt, June 30, 1920 was: School fund, \$1,163,700; normal school fund, \$1,512,292.

EDUCATION. The school population in the year 1919-20 was 818,885; enrollment, 465,243; average daily attendance, 368,712; number of teachers, 16,985; median salary of teachers, \$86 a month. An exact average of teachers could not be figured from the records, which showed a scale ending "\$150 and up."

TRANSPORTATION. On Jan. 1, 1920, the latest date for which figures were available, the mileage of railroads operating in the State was as follows: Road owned, 7548.35; road operated, excluding trackage rights, 7588.18; road operated, including trackage rights, 7716.17.

CHARITIES AND CORRECTIONS. The following table gives the details in regard to the State institutions in 1920:

INMATE POPULATION JUNE 30, 1920

<i>Institutions</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Parole</i>
Wis. State Hospital for Insane, Dr. Frank I. Drake, Superintendent, Mendota, Wisconsin	388	277	665	511
No. Hospital for Insane, Dr. A. Sherman, Superintendent, Wineago, Wisconsin	412	251	663	356
*Wis. School for the Deaf, T. Emory Bray, Superintendent, Delavan, Wisconsin	91	66	157	....
*Wis. School for the Blind, J. T. Hooper, Superintendent, Janesville, Wisconsin	60	41	101	....
Wis. Ind. School for Boys, Oscar Lee, Superintendent, Waukesha, Wisconsin	439	....	439	490
Wisconsin State Prison, Henry Town, Warden, Waupun, Wisconsin	667	26	693	52
Wis. State Public School, Dr. L. H. Prince, Superintendent, Sparta, Wisconsin	145	111	256	741
Wis. Home for the Feeble-Minded, Dr. A. L. Beier, Superintendent, Chippewa Falls, Wisconsin	475	541	1016	108
So. Wis. Home for the Feeble-Minded and Epileptic, Dr. H. C. Werner, Superintendent, Union Grove, Wisconsin	30	64	94	7
Wis. State Reformatory, R. M. Coles, Superintendent, Green Bay, Wisconsin	273	....	273	....
Wis. State Tuberculosis Sanatorium, Dr. R. L. Williams, Superintendent, Statesan, Wisconsin	95	67	162	....
Central State Hospital for the Insane, Sr. J. F. Brown, Superintendent, Waupun, Wisconsin	108	....	108	....
Tomahawk Lake Camp, F. A. Reich, Superintendent, Tomahawk Lake, Wisconsin	20	....	20	....
Wis. Ind. School for Girls, Mary J. Berry, Superintendent, Milwaukee, Wisconsin .....	....	229	229	125

* Vacation period, May 31, 1920, figures used.

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 498,576; Cox (Democrat), 113,422; Debs (Socialist), 80,635; as compared with the following vote in the presidential election of 1916: Hughes (Republican), 221,323; Wilson (Democrat), 193,042; Benson (Socialist), 27,631; Prohibitionist, 7318. The vote for governor was: Blaine (Republican), 366,247; McCoy (Democrat), 247,746; and for United States Senator: Lenroot (Republican), 281,576; Thompson (Independent), 235,029; Reinsch (Democrat), 89,265; Weber (Socialist), 66,172; Mead (Prohibitionist), 5107.

WISCONSIN, UNIVERSITY OF. A co-educational State institution at Madison, Wis., founded in 1848. The enrollment for the summer session of 1920 was 1611 men and 1967 women, and

that of the regular fall session was 4954 men and 2410 women. The faculty numbered 927, as compared with 834 in 1919. The productive funds for the year were \$49,487 and the income amounted to \$3,707,280. The Bradley Memorial Hospital was an important gift completed in 1919-20. President, Edward A. Birge, Ph.D., Sc.D., LL.D.

WLADIMIR, GRAND DUCHESS OF. Widow of the Grand Duke Wladimir, uncle of the late Czar, died in France, September 1920. She inherited the title of the Grand Duchess of Mecklenburg. When the Russian revolution broke out she was in the Crimea with her son the Grand Duke André. In spite of the dangers that she ran she was unwilling to leave the country and remained for a long time in the Crimea but was obliged to leave when the Bolsheviks arrived at the beginning of spring, 1920. She then went to France

where she remained to the time of her death. She was regarded as a warm friend of France.

WOMAN'S CHRISTIAN TEMPERANCE UNION. Instead of the annual convention of the National Woman's Christian Temperance Union, an executive committee meeting was held immediately following the sessions of the International Congress Against Alcohol, in Washington, D. C., in September at which Miss Anna A. Gordon, national president of the W. C. T. U., was one of the principal speakers. During the year that has followed the enforcement of the Eighteenth amendment, the Union has been actively engaged in the several other lines of welfare work which are included in its field of endeavor. Through the Department of Child Welfare a chair of Eugenics was established in

the Iowa State University in connection with the Department of Child Research which is a part of the regular work of the University. Through this important research is being carried on to secure data from which to effect better conditions for the child of the future. Also a Mother-Child center has been established in Detroit where welfare work is being successfully carried out. Through the Department of the Social Morality a new school, the Frances E. Willard School for Girls at Belen, New Mexico, has been opened. The school is for girls who are otherwise unable to secure academic or vocational training. The Americanization Department has developed a new programme of Americanization work, the basic idea of which is the home teaching of the women who are unable, because of family cares, to go elsewhere for teaching in English and the rudiments of citizenship. The plan has been tried out for a year in New York City and a new plant has just been opened in Chicago on Blue Island Ave. in the heart of a densely foreign district. The Department of Scientific Temperance Instruction is proceeding along the established way of securing the instruction of the youth of the nation in the evil effects of alcohol and the narcotic drugs, having for its aim the education of a generation in the harmful effects of such materials to ensure the permanence of the prohibition reform and to further others. Through the Department of Christian Citizenship it is the aim to educate the newly enfranchised women in the proper exercise of their privileges of citizenship. During the spring and summer of 1920 Miss Anna A. Gordon, president, and Miss Julia F. Deane, editor of the *Union Signal*, the official organ of the W.C.T.U., made a tour of such parts of Europe as were open to foreigners in the interests of world prohibition. They returned late in August just in time for the International Congress. An even hundred women from the United States branch attended the World Convention held in London in April. At this meeting Miss Anna A. Gordon was elected vice-president of the world organization and Mrs. Ella A. Boole, treasurer. Miss Gordon is president of the organization in the United States and Mrs. Boole, vice-president-at-large. Other general officers are: Mrs. Frances P. Parks, corresponding secretary; Mrs. Margaret C. Munns, treasurer; Mrs. Elizabeth Preston Anderson, recording secretary; and Mrs. Sarah Haines Hoges, assistant recording secretary. Headquarters are maintained at Evanston, Ill.

WOMAN'S RELIEF CORPS. This organization, which was the first composed entirely of women to have war relief as one of its objects, came into existence to meet the need of the Grand Army of the Republic for assistance in caring for needy comrades and their dependents, and is the only recognized auxiliary of that organization. Local societies were organized in various states in 1872, and in 1883 the national organization was completed. The objects of the organization are to "assist the G. A. R. in caring for their comrades and dependent ones; to perpetuate the memory of their heroic dead; to cherish and emulate the deeds of the army nurses and all loyal women who rendered service to our country in her hour of peril; to maintain true allegiance to the United States of America; to inculcate lessons of patriotism; and to encourage the spread of universal liberty and equal

rights to all." Thousands of flags have been presented and patriotic literature distributed in many communities.

The Thirty-Eighth National Convention, held in Indianapolis, Indiana, on Sept. 21, 22, 23, 1920 was the largest ever held, there being 650 voting delegates and about half that number visiting members present. The membership of March, 1920, reported at that time, amounted to 194,211. There was spent for patriotic work during the year the sum of \$41,331.69; the amount spent for relief work was \$54,307.43, besides the relief other than money which was valued at \$58,398.46. The amount turned over to the Posts of the G. A. R. reached \$22,538.65. For Memorial observance there was spent the sum of \$1787.62, while an additional \$1000 went to decorate the graves of Union soldiers lying in the South. A gift of \$1360 was presented to needy army nurses at Christmas. Flags distributed numbered 5159, and 4549 schools were visited. All over the country the Woman's Relief Corps has inaugurated the little ceremony at naturalization proceedings, of pinning on the lapel of the coat of the new citizen, a small American flag and presenting him with a somewhat larger flag for his home. The organization has within the last two years added as permanent departments of the work Standing Committees of Americanization and Child Welfare. Officers for the year 1920-1921 are as follows: President, Inez J. Bender; secretary, Flo J. Miller; treasurer, Estella E. Plopper. Headquarters are maintained at 218 Citizen's Bank Building, Decatur, Ill.

WOMAN SUFFRAGE. By Jan. 1, 1920, the Anthony suffrage amendment had been ratified by twenty-two States as follows: Illinois, Wisconsin, Michigan, New York, Ohio, Pennsylvania, Massachusetts, Texas, Iowa, Missouri, Arkansas, Montana, Nebraska, Minnesota, New Hampshire, Utah, California, Maryland, North Dakota, South Dakota, and Colorado. During 1920, the following States ratified: Rhode Island, Jan. 6; Kentucky, Jan. 6; Oregon, Jan. 12; Indiana, Jan. 16; Wyoming, Jan. 27; Nevada, Feb. 7; New Jersey, Feb. 10; Idaho, Feb. 11; Arizona, Feb. 12; New Mexico, Feb. 19; Oklahoma, Feb. 28; West Virginia, March 10; and Washington, March 22. Out of the thirty-six States required for ratification, thirty-five had thus accepted the amendment by March 22. Of these, twenty-five ratified the amendment in special sessions and ten in regular sessions. There were bitter contests over the subject in some of the States, especially in Delaware and West Virginia, and repeated attempts to call special sessions to vote on the amendment in Vermont and Connecticut had been made and failed. By the middle of the year, States that had not voted at all upon the amendment were Connecticut, Vermont, Tennessee, North Carolina and Florida. The following States had definitely refused to ratify: Georgia, Virginia, Alabama, Mississippi, South Carolina, Maryland, Delaware and Louisiana. Special efforts were made by the suffrage party partisans during the first part of the year, in order that the women of the country might take part in the coming presidential election. As matters stood, in the middle of the year, 1920, the following fifteen States had equal suffrage: Arizona, California, Colorado, Idaho, Kansas, Michigan, Montana, Nevada, New York, Oklahoma, Oregon, South Dakota, Utah, Washington,

and Wyoming. The following thirteen had granted presidential suffrage: Illinois, Indiana, Iowa, Kentucky, Maine, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Rhode Island, Tennessee and Wisconsin. Two had given the women the vote in primary elections, namely, Arkansas and Texas.

SPAIN. The feminist movement in general, and the woman suffrage movement in particular, has for many years lagged behind in Spain as compared with other countries and Spanish women were not even represented in the great international suffrage congress at Budapest in 1913. There were, however, various individuals and societies that worked for the advancement of woman's rights. One of the most admired of the pioneers was Concepcion Arenal, who was born at Vigo in 1820 and whose career was frequently recalled at various meetings during the current year, the centennial of her birth. Many prominent women, including members of the aristocracy, had also been active in recent years for the improvement of the condition of women workers and for suffrage propaganda, etc., and a feminist review, a union of Spanish women and various other organizations had been established. In 1903 the International Association of Spanish Women was founded and in 1914 a Woman's Association of liberal tendencies began publication of a review called *Redemption*. The former of these was especially active and out of it grew most of the present organizations either having general feminist aims or specifically devoted to the cause of votes for women. The definite organization and rapid progress of the movement dates from 1918 and owes its impetus chiefly to the development of woman labor during the war. Associations of woman workers were formed and a programme of various reforms was put forth, including measures favored by various groups such as the Young Women of the Universities, Women of the Future, The Concepcion Arenal Society, etc. To offset the woman's movement, or rather to keep it within channels approved by the Church, a woman's society of Catholic Action was founded, having many of the same aims as the other women's organizations, but loyal to the Church. There were also various organizations of women Socialists and groups organized under the institutions called the Houses of the People. Such associations, however, were not recognized by the International Association of the Spanish Women, because they were influenced by political groups controlled by men. In 1919, the minister of the interior drew up a plan of social reforms among which was woman suffrage and it was expected that the issue of the suffrage would soon be a practical one in Spanish politics.

WOMEN'S CLUBS, GENERAL FEDERATION OF. There were in 1920 in the United States approximately 2,500,000 members of this federation. There are clubs in every city, town, and most of the villages, composed of "thinking serious-minded women meeting together regularly, with a definite programme which undertakes to reach the full community problem." There are seventeen clubs in foreign countries, and fourteen national organizations affiliated with the Federation. With the coming of woman suffrage the clubs feel that their work is becoming more and more important.

The fifteenth Biennial Convention was held in Des Moines, Iowa, on June 16-23, 1920. A large number of resolutions were adopted, for the

most part reaffirming previous measures which were deemed necessary for the future welfare of the country. These resolutions took the form of urging legislation upon the government. Thirty-six addresses on special subjects were made on matters of public interest. These addresses are printed in the report of the Convention. Reports from the following departments were read: Art, civics, civil service reform, conservation, education, home economics, industrial and social conditions, legislation, literature and library extension, music, and public health. The report of the recording secretary showed that 635 certificates of membership were granted during the two year period to new clubs. After the convention, the departments were reorganized in an effort to clear out all of the "dead timber and put the Federation on an up-to-date working basis."

The officers for 1920-1922 are: President, Mrs. Thomas G. Winter, Minneapolis; first vice-president, Mrs. W. S. Jennings, Jacksonville, Fla.; second vice-president, Mrs. J. R. Schermerhorn, East Orange, N. J.; recording secretary, Mrs. Adam Weiss, Del Norte, Colorado; corresponding secretary, Mrs. George W. Plummer, Chicago; treasurer, Mrs. Benjamin B. Clark, Red Oak, Iowa; and auditor, Mrs. H. A. Guild, Phoenix, Ariz. The official organ of the Federation is *The General Federation Magazine*. Headquarters are maintained in the Maryland Bldg., Washington, D. C. and the director is Miss Lida Hafford.

WOMEN IN INDUSTRY. A study of the industrial opportunities and training for women and girls pursued in 1920 under the Women's Bureaus of the United States Department of Labor indicated from the experience of women's work in war time that the most promising future for craftswomen lay in the following industries in the order of their importance: (a) Machine shops where light parts are made; (b) wood-product factories where assembling and finishing are important processes; (c) optical instrument factories; (d) sheet-metal shops. Investigation of schools giving industrial courses for women tended to show that rather more than half were part-time or evening schools, and that while a majority of them were teaching women some branch of the clothing industry, a considerable number were giving instruction in subjects relating to iron and steel manufacture and textile operations. It was thus indicated that women were engaging in new fields. The largest number of women wage-earners in the industries above mentioned were thus distributed by States and principal cities:

(a) Machine-shop and sheet-metal industries.

- (1) Ohio: Cleveland, Toledo, Dayton.
- (2) Michigan: Detroit, Flint.
- (3) New York: Brooklyn, Buffalo, Rochester, Syracuse.
- (4) Pennsylvania: Philadelphia, Pittsburgh.
- (5) Illinois: Chicago.
- (6) Connecticut: Bridgeport, Hartford, New Haven.
- (7) Massachusetts: Boston, Worcester.
- (8) Rhode Island: Providence.

(b) Wood-product factories where assembling and finishing are important processes—

- (1) New York: New York City.
- (2) Michigan: Grand Rapids.
- (3) Illinois: Chicago.
- (4) Pennsylvania: Philadelphia.
- (5) Massachusetts: Gardner, Wakefield.
- (6) Wisconsin: Sheboygan.

(c) Optical goods factories.

- (1) New York: Rochester.
- (2) Massachusetts: Southbridge.
- (3) Pennsylvania: Philadelphia.

Further general considerations presented as the result of this study were as follows:

Public vocational training facilities for occupations in these industries and for preparing teachers for these industries are already in existence in these States and cities. But very few of these facilities are now being used by women, either because women are not admitted to these public vocational schools, or are not encouraged to attend.

The greater number of industrial training courses in which women are enrolled in public and semipublic schools throughout the country are courses in dress-making and sewing for the custom trade and in millinery.

The increase in the numbers of wage-earning women, the demonstrated capabilities of women during the war, the decrease in male immigrant labor, and the growing demands of our expanding industries call, not only for the admission of women into courses in machine shop, sheet metal, factory woodworking, and optical work, but for the same policy among vocational educators of encouraging girls as is now adopted to encourage boys to take such instruction.

The Women's Bureau issued at the close of the year a report on State and Federal legislation showing to what extent the legal eight-hour working day had been established in the United States and its possessions in 1920. Its findings in part are summarized as follows: Eight States—Arizona, California, Colorado, Montana, Nevada, Utah, Washington, Wisconsin—one Territory, Porto Rico, and the District of Columbia have laws which limit the working day for women in certain occupations to eight hours. The effectiveness of these laws varies greatly in the different States. The degree of inclusiveness of the list of occupations, the provisions that make for thorough enforcement, whether the law limits both daily and weekly hours, whether the law allows overtime, all make for wide differences in the actual results obtained by these laws.

Two States, Kansas and California, provide that, in specified industries, for all hours worked above eight in any one day an increased hourly rate shall be paid. These laws do not establish an eight-hour day, but they do show the recognition by these two States that eight hours is the fair maximum day's labor, and by making the work done in the hours over eight more costly, tend to limit the working day definitely to eight hours.

These States—Massachusetts, North Dakota, and Oregon—have laws which limit the working week for women in certain occupations to 48 hours, but do not limit the daily hours to eight. The actual application, however, forces in many cases an eight-hour day.

One State, Minnesota, has established a basic 48-hour week for all women workers. Since this standard was established by the minimum wage board it is primarily a means of increasing wages.

Five States—California, Connecticut, Missouri, New York, and Pennsylvania—have laws stating that eight hours shall constitute a day's work unless otherwise agreed. Although work above eight hours in any one day is to be paid extra compensation, it is not penalized by requiring rates of time and a half or double time. The Federal Government has a far more definite law that provides that persons employed on contracts for the United States shall be paid on the basis of eight hours constituting a day's work, with time and a half for overtime.

Five other States—Illinois, Indiana, Montana, Ohio, and Wisconsin—and the Federal Government have laws providing that eight hours shall be a day's work in a limited number of occupations. Illinois and Indiana cover only manual

labor; Montana, labor on public highways; Ohio, work in manufacturing, mechanical, or mining business; Wisconsin, work in manufacturing or mechanical business; United States, letter carriers.

The Territory of Alaska has been the first political division of the United States to pass an all-inclusive eight-hour law. This law, which provides an eight-hour day for all wage and salary earners, was submitted to the electorate and passed. An Alaskan court, however, has declared it to be unconstitutional. No test case has as yet reached the United States Supreme Court.

The largest group of laws limiting the hours of work to eight in any one day covers work done either directly or indirectly for the State. Next to this is the group of laws covering occupations considered especially hazardous. For further details presented in convenient tabular form see *The Eight-Hour Day in Federal and State Legislation* (Bulletin, No. 5), Women's Bureau, United States Department of Labor. For other aspects of the general subject including especially a study of the experience of war-time with precise data in respect to the employment and substitution of women in industry, see *The New Position of Women in Industry* (Woman's Bureau, United States Department of Labor, 1920).

WOOD, HORATIO C. Professor of medicine and author of medical works, died, January 3. At the time of his death he was professor emeritus of materia medica, pharmacy, and general therapeutics in the University of Pennsylvania Medical School. He was born at Philadelphia, Pa., Jan. 13, 1841 and graduated from the medical department of the University of Pennsylvania in 1862. In youth he showed great interest in natural history and he did original work in the Academy of Natural Science before studying medicine. After serving in the hospitals he began private practice in 1865, continuing his study in natural history, especially in botany, and publishing many papers within that field. In 1866 he was appointed to the medical faculty of the university and after the organization of the university hospital became professor of nerve diseases. In 1901 he was made professor of materia medica and therapeutics. His works include *Thermic Fever, or Sunstroke* (1872); *Materia Medica and Therapeutics* (1874); *Brain Work and Other Work* (1880); and *Nerve Diseases and their Diagnosis* (1874). He was a member of many learned bodies, president of the College of Physicians in 1902 and in 1903, and president of the American Pharmacopoeial Convention from 1890 until 1910.

WOOD, LEONARD. See UNITED STATES.

WOOD, SIR LINDSAY. British coal-owner, died in England, September 22. For more than forty years he had been president of the Durham Coal-owners Association. He was born June 21, 1824 and educated at Kings College, London. After serving as a mining engineer in the Hetton collieries which his father was then managing he became assistant-manager and after his father's death in 1866 managing-director. The subject of the pressure of gas in coal drew his attention and he made important experiments in respect to it. He also did useful work on various royal commissions and as chairman of the Durham Coal-owners Association he did much to maintain good will between the owners and the miners. In politics he was a Unionist.

WOOD PULP. See PAPER.

WOODS, HERBERT SPENCER. Physiologist, died at Dallas, Texas, January 4. He was born in Missouri and graduated at the University of that State. He studied at the university of Illinois, Wisconsin and California and taught at the Texas Christian University and at the Agricultural and Mechanical College at Texas.

WOOL. See LIVE STOCK.

WOOL AND WORSTED. See TEXTILE MANUFACTURING.

WORCESTER FESTIVAL. See MUSIC, *Festivals*.

WORCESTER POLYTECHNIC INSTITUTE. A non-sectarian institution for theoretical and practical training for men at Worcester, Mass., founded in 1865. The enrollment for the summer session of 1920 was about 300, and that of the regular fall session was 559. There were 61 members in the faculty, including 11 additions. The productive funds of the institution amounted to 1,500,000. Gifts during the year amounted to \$400,000, which was added to the endowment. President, Ira N. Hollis. The library contained about 15,000 volumes.

WORKMEN'S COMPENSATION. **FEDERAL LEGISLATION FOR 1920.** An act supplementing the present workmen's compensation act was passed defining compensation and to whom it should go more clearly. Throughout the war risk act the terms "father" and "mother" are broadened to include persons who for a year prior to the man's enlistment have stood "in loco parentis" to him. "Brother" and "sister" include children of such persons. All legally adopted children are included. The time during which family allowances are payable was extended from one month to four months after the end of the war. This act was made retroactive to April 6, 1917. The definition of permanent total disability is broadened and provision made for compensating double permanent total disability at \$200 a month. This law went into effect Dec. 24, 1919.

STATE LEGISLATION: GEORGIA. A new act was passed in Georgia. It is similar to the workmen's compensation laws in other States, compulsory as to public and elective as to all private employments where more than five are engaged. It provides compensation for accidental industrial injuries not due to the employee's willful misconduct, intoxication or willful violation of safety laws. For the first thirty days after an accident the employer must provide medical care not exceeding \$100. No cash compensation is given for the first fourteen days. In case of death total dependents are to receive one-half of the wages for 300 weeks. This act went into effect Oct. 1, 1920.

KENTUCKY. This State increased the maximum of its weekly compensation in a number of directions. Allowances for special needs were included in the law. This law went into effect June 16, 1920.

LOUISIANA. Scale of compensation was increased in this state from 55 per cent to 60 per cent of wages. Insurance is made compulsory in a company approved by the secretary of state, unless exception is made by him. If an employer settles for a lump sum at a discount greater than 6 per cent a year he is penalized to the extent of three times the compensation. The act is extended to railway and steamboat employees not covered by the federal liability act. This law went into effect Aug. 6, 1920.

MARYLAND. Waiting period before compensation is payable is reduced from two weeks to three days. Allowances for medical care is increased from \$150 to \$300. Scale of compensation was increased from 50 to 66⅔ per cent in all except cases of temporary partial disability. Compensation is provided for loss of hearing and unlisted mutilations and disfigurement. Correction of vision by lenses cannot be considered in computing loss of vision. A beneficiary must move out of the United States, instead of out of the state, to permit a commutation of compensation. The term "child" has been extended to include step-children, illegitimate children, and other children who were members of the deceased worker's household when the accident or death occurred. The state also granted increased appropriation for the industrial accident commission. This law went into effect June 1, 1920.

MASSACHUSETTS. Failure to give notice of injuries or to file a claim within the prescribed period will not bar recovery under the workmen's compensation act if it is found that the insurer was not prejudiced in consequence. This law went into effect July 14, 1920.

NEW YORK. The workmen's compensation law is extended to include a limited number of occupational diseases. The maximum and minimum weekly compensation was raised. Loss of binocular vision or loss of 80 per cent vision of an eye is made equivalent to the loss of an eye. Many details as to amounts of payment, commission percentage, lump sum reductions were specified. This law was enacted May 5, 1920.

NORTH DAKOTA. The workmen's compensation bureau was enlarged, a commissioner of insurance being included. The bureau is to represent the employers, labor, and the public. This law went into effect July 1, 1920.

OHIO. If an employer fails to pay workmen's compensation insurance premiums or execute a bond, the court appoints a receiver for his property and business who shall pay the premiums determined to be due to the state insurance fund. Other duties of a firm were defined. This law went into effect Feb. 9, 1920.

OREGON. Compensation benefits accruing between Dec. 1, 1919, and June 30, 1921, are to be increased 30 per cent. This law was enacted June 17, 1920.

RHODE ISLAND. Scope of the workmen's compensation law is extended from employees earning not more than \$1800 a year to those earning not more than \$3000 a year. This law went into effect April 23, 1920.

SOUTH DAKOTA. Insurance commissioner is authorized to regulate workmen's compensation insurance premium. This law went into effect Sept. 7, 1920.

VIRGINIA. Maximum weekly compensation was raised, waiting period reduced from 14 to 10 days, and eliminated entirely if incapacity lasts more than six weeks. Employers are liable for medical care covering the period of 60 instead of 30 days. Further provisions for compensation were specified. Appropriations for commissioners was increased. This law went into effect July 1, 1920.

PORTO RICO. Workmen's relief commission was reorganized giving power to the governor to appoint five commissioners representative of the different parties and the bureau of labor; commissioners given power to investigate all accidents. An employer's property may be attached

to secure payment of compensation. This law went into effect May 6, 1920.

WORLD'S CROPS. See AGRICULTURE.

WRANGEL, GENERAL. Russian leader of the White Guards; successor of Kolchak, Denikin and others as commander of the Anti-Bolshevist forces in Russia. He was prominent in 1920 as the main hope of the movement against the government. He was born at Petrograd in 1879, the son of a Baltic nobleman of Swedish descent and was brought up like other members of the noble class. At the age of twenty he entered the Academy of Engineers at Petrograd where he finished his course with honor. He served with a Cossack regiment in the Russo-Japanese War. When the great war broke out he was placed in command of a regiment of horse guards and distinguished himself by a brilliant rally of his cavalry resulting in the capture of the first two German guns taken by the Russians. He was then raised to the rank of colonel, and in 1915 was appointed to the command of a Cossack regiment on the Galician front. He was on the Austrian front at the outbreak of the revolution. He was a follower of General Kaledin and afterwards joined Denikin. When Denikin failed, Wrangel became the chief of the main Anti-Bolshevist army, and during the summer of 1920 attained a considerable degree of success.

WRECKS. See SAFETY AT SEA.

WRESTLING. A new heavyweight wrestling champion was the outcome of the many professional battles on the mat held during 1920. Ed. "Strangler" Lewis captured the title through his defeat of Joe Stecher who had won the championship in 1919. The success of Lewis was due to his persistent use of the hold known as the "head lock." This particular hold has aroused considerable criticism among followers of the sport on the ground of its brutality and it is possible that 1921 will see it barred.

The Amateur Athletic Union championships were held at Birmingham, Ala., the winners in the various classes being: 108 pounds, K. Benson, Swedish-American A. C.; 115 pounds, Sam Pam-mow, Chicago Hebrew Institute; 125 pounds, A. Gallas, Greek Olympic Club; 135 pounds, G. Metropoulis, Gary (Ind.) Y. M. C. A.; 145 pounds, W. Tikka, Finnish-American A. C.; 155 pounds, E. Leino, New York A. C.; 175 pounds, Karl Kunert, Gary Y. M. C. A.; heavyweight, N. Pendleton, New York A. C.

WRIGHT, ARTHUR. British clergyman and scholar, died August 7. He was born at Birmingham, Eng., Aug. 16, 1843 and graduated with honors at Cambridge, where he was fellow, lecturer, and tutor. He wrote *The Composition of the Four Gospels* (1896); *Some New Testament Problems* (1898); *St. Luke's Gospel in Greek* (1900).

WUNDT, WILHELM. Celebrated German psychologist, died at Leipzig in September. He was born in Neckarau in Baden in 1832 and studied at the universities of Tübingen, Heidelberg and Berlin, specializing in medicine. He taught respectively at Heidelberg, Zürich and Leipzig. He was rector of the last-named university in 1889-90 and he founded there a laboratory of psychology which was taken as the model for similar establishments in many universities of Europe and America. He has been termed the creator of modern experimental psychology and his *Grundzüge* has been for many years a standard text. The breadth of his training and the ex-

traordinary range of his scholarship enabled him to effect a synthesis of the various branches of the science pursued by famous investigators separately in the past. He defined psychology as the science of immediate experience. His system begins with physiological facts and tries to discover elementary psychical laws by variation of external conditions. In short, his method treats physiology as a means toward the building up of psychological science. He was a philosopher as well as a psychologist and in the course of his intensely laborious life he published volumes on a wide range of subjects in both these fields, of which the list is too long to be quoted in full here. In addition to his personal writings, he edited twenty volumes of philosophical studies.

Among the works which have been widely used in English speaking countries may be mentioned: *The Principles of Physiological Psychology* and the six-volume treatise, *Völker Psychologie*, which discusses language, art, mythology and religion. His work on logic is also widely known and regarded as in some respects among the most original of his treatises. It follows somewhat along the lines of Mill's *Logic*, but is wider in scope and contains a greater variety of illustrations. His work on ethics is remarkable also for its comprehensiveness. He owed much to his contemporaries, especially to Herbert and Fechner, but though his psychological work is not in all respects original, it must be regarded as his chief claim to permanent recognition.

WURTEMBERG. One of the constituent states of the former German empire; situated between Bavaria on the east and Baden on the west. Area, 7,534 square miles; pop., Dec. 1, 1910, 2,437,574. It was proclaimed a republic in November, 1918 and on Mar. 17, 1919, Wilhelm Blos was elected president.

WYOMING. POPULATION. According to the preliminary report of the census of 1920, there were 194,402 residents in the State, Jan. 1, 1920, as compared with 145,965 in 1910.

AGRICULTURE. According to the census of 1920, the number of farms was 15,811, an increase of 42.1 per cent, since 1910. The following table was compiled from the estimates of the United States Department of Agriculture for the years, 1919 and 1920:

Crop	Year	Acres	Prod. Bu.	Value
Corn	1920	65,000	1,560,000	874,000
	1919	50,000	800,000	1,320,000
Oats	1920	300,000	11,400,000	7,068,000
	1919	285,000	5,130,000	5,746,000
Barley	1920	28,000	1,008,000	1,109,000
	1919	34,000	510,000	892,000
Wheat	1920	254,000	5,080,000	6,858,000
	1919	250,000	3,540,000	7,505,000
Rye	1920	30,000	540,000	621,000
	1919	30,000	270,000	486,000
Hay	1920	1,100,000	2,210,000	27,348,000
	1919	925,000	1,151,000	26,583,000
Potatoes	1920	27,000	8,875,000	4,050,000
	1919	30,000	2,400,000	4,560,000
Tons.				

MANUFACTURES. Preliminary figures of the United States Bureau of the Census showed exceptional increase at the census of 1919, as compared with that for 1914, practically due to the tremendous increases in the petroleum refining industry. In the order of their importance from a percentage standpoint, the increases for the several items ranked as follows: Materials, 658.3 per cent; value of products, 624.2 per cent; value added by manufacture, 590.6 per cent;

wages, 381.8 per cent; salaries, 217.1 per cent; capital, 183.2 per cent; wage earners, 120.1 per cent; salaried employees, 113.3 per cent; proprietors and firm members, 89.8 per cent; primary horsepower, 76.2 per cent; and number of establishments, 69.7 per cent. The capital invested, as reported in 1919, showed a gain of \$53,621,000, or 183.2 per cent, over that in 1914. The average capital per establishment was approximately \$145,000 in 1919 and \$87,000 in 1914. The cost of materials used in 1919 showed an increase over that for 1914 of \$36,597,000 or 658.3 per cent. The average cost of materials per establishment in 1919 was approximately \$74,000 and in 1914 \$16,000. The value of products in 1919 showed an increase over that in 1914 of \$70,049,000, or 624.2 per cent. The average per establishment in 1919 was approximately \$142,000 and in 1914 \$33,000. The value added by manufacture in 1919 showed an increase over that in 1914 of \$33,452,000, or 590.6 per cent. The value added by manufacture in 1919 formed 48.1 per cent of the total value of products and in 1914, 50.5 per cent. In 1919, as compared with 1914, the number of salaried employees showed an increase of 469, or 113.3 per cent, while the average number of wage earners increased 3589, or 120.1 per cent. A comparative summary for the State for 1914 and 1919 follows:

	Census		Per cent. of increase 1914 to
	1919	1914	1919
Number of establishments	572	337	69.7
Persons engaged in manufactures	8,017	3,696	116.9
Proprietors and firm members	556	293	89.8
Salaried employees	883	414	113.3
Wage earners (average number)	6,578	2,989	120.1
Primary horsepower	17,624	10,004	76.2
Capital	\$82,891,000	\$29,270,000	183.2
Services	12,824,000	2,843,000	351.1
Salaries	1,684,000	531,000	217.1
Wages	11,140,000	2,312,000	381.8
Materials	42,158,000	5,559,000	658.3
Value of products	81,272,000	11,223,000	624.2
Value added by manufacture (value of products less cost of materials)	39,116,000	5,664,000	590.6

ELECTIONS. The vote in the presidential election of 1920 was: Harding (Republican), 35,091; Cox (Democrat), 17,429; Christensen (Farmer-Labor), 2180; Debs (Socialist), 1234; as compared with the following vote in the presidential election of 1916: Wilson (Democrat), 28,316; Hughes (Republican), 21,698; Benson (Socialist), 1453.

WYOMING, UNIVERSITY OF. An institution of the higher learning at Laramie, Wyo., founded in 1886. The enrollment for the summer session of 1920 was 352 and that of the regular fall session was 444 resident college students. The faculty numbered 75. The income from State and Federal governments was \$450,000. There were about 45,000 volumes in the library. President, Aven Nelson.

YACHTING. The yachting season of 1920 was notable for the series of races held off Sandy Hook with the America's Cup, emblematic of the world's championship, at stake. The defending yacht was the Resolute owned by members of the New York Yacht Club and the challenger was the Shamrock IV, owned by Sir Thomas Lipton of the Royal Ulster Yacht Club of Belfast, Ireland. It was the fourth attempt on the part of Sir Thomas to capture the cup and like his former efforts resulted in failure.

Five races were sailed of which the Resolute

captured three and the Shamrock two. Of the two races won by the challenger only one could be termed a victory gained on its merits as the second defeat of the Resolute was due solely to the frail construction of the defending yacht.

The conditions under which the races were sailed were most unsatisfactory. Merchant craft interfered with the yachts and the yachts in turn caused much trouble for incoming liners and boats engaged in harbor traffic. The conduct of the races too aroused much criticism, especially the postponement of the fifth and deciding contest on the ground that the skippers of the rival boats feared to risk their frail craft in a sea they regarded as "too rough" and with a "wind too brisk." It was contended by the critics that such weather conditions would have afforded a real test of the seaworthiness of the two yachts. The probabilities are that the future races of the kind will be held over the Brenton's Reef course off Newport and also that the competing yachts will be of a type prepared to go out and spread their canvas in any kind of weather.

A brief summary of the races follows:

First race, July 15, fifteen miles to windward and return, a light wind blowing from the southwest. The Resolute withdrew when she was one mile ahead of the Shamrock and about to round the fifteen-mile turn as a result of the parting

of her throat halyards which dropped her gaff and let her mainsail down. The Shamrock finished in 4 hours, 25 minutes, 12 seconds, elapsed time.

Second race, July 20, thirty-mile triangular course, Shamrock winning by 9 minutes, 27 seconds, elapsed time, and by 2 minutes, 26 seconds corrected time. The Resolute's greater sail area gave the defender a handicap of 6 minutes, 40 seconds.

Third race, July 21, windward and leeward course in light southwest wind, Resolute winning by her time allowance of 7 minutes, 1 second although each yacht covered the course in the same time, 4 hours, 3 minutes, 6 seconds.

Fourth race, July 23, thirty-mile triangular course in squally weather, Resolute winning by 3 minutes, 18 seconds elapsed time and 9 minutes, 58 seconds with handicap.

Fifth race, July 27, windward and leeward course in light southwest wind, Resolute winning by 13 minutes, 5 seconds elapsed time and 19 minutes, 45 seconds with handicap.

The first annual race between fishing schooners for the championship of the North Atlantic Fishing Fleet was held off Halifax, Nova Scotia October 30 and November 1 over a forty-mile course. The contending boats were the Esperanto representing the United States and the Delawana

representing Canada, the winner of two out of three races to be declared the victor. The Esperanto captured two straight races, the first by a margin of 18 minutes, 28 seconds and the second by 7 minutes, 15 seconds thereby taking possession of the trophy and also winning a purse of \$4,000.

The international races for the Harmsworth Motor Boat Trophy were held at Cowes, Isle of Wight, August 10 and 11, the regulations calling for the best two out of three races. Miss America, owned by G. A. Wood, United States, won two straight victories over a thirty-mile course. In the first race Maple Leaf VI, owned by Sir M. Edgar, England, finished second but in the second race Miss Detroit IV, another American boat, took second honors.

Miss America added to her laurels of the year by winning the Gold Cup championship at Detroit, Mich., and the Lake George one-mile trophy. This boat also established a new world's record by averaging 77.85 miles per hour.

YALE UNIVERSITY. A non-sectarian institution of the higher learning at New Haven, Conn., founded in 1701. The enrollment for the regular fall session of 1920 was 3896. The faculty numbered 569 including 52 additions. The endowment amounted to \$24,049,730.45. Yale University was made beneficiary under the will of the late John W. Sterling of New York City, who left a bequest to Yale of about sixteen or twenty millions of dollars. The sum was to be held by the trustees for the University under Mr. Sterling's bequest and the money to be used for memorial buildings and for the foundation of scholarships, fellowships and lectureships, the endowment of new professorships, and the establishment of special funds for prizes. This in not included in the endowment figures mentioned above. Notable also were the annual gifts of the alumni during the past three years through the Yale Alumni University Fund Association, each year's contribution totaling over half a million dollars and the largest being in excess of \$700,000 for a single year. The library contained 1,250,000 volumes not counting unbound pamphlets. The annual accessions exceed 40,000 including 5000 periodical publications, and about 60,000 volumes and 4000 pamphlets in the Yale Law School library and additional volumes in other school libraries of the university. A beautiful Memorial Quadrangle containing six campuses which was the gift of Mrs. Stephen V. Harkness, and covers an entire city square was the latest building under construction, at a cost of over a million dollars. Among the other gifts, the most important one was that of Mr. Sterling's. The annual gifts of the alumni during the past three years were a contribution of about 700,000 for each single year. In March, 1919, a thorough-going reorganization of the University was voted by the Yale Corporation. This included, among other features, the creation of a common undergraduate Freshman Year; the elimination of the Select Course from the Sheffield Scientific School and the extension of the course in that School from three to four years; the concentration of all post-graduate work not given in the professional Schools in the Yale Graduate School; the creation of several new offices, including the Provost, who is an educational assistant to the President; the Dean of Students, who is in charge of student morale, and the Dean of Freshmen, to administer with a separate

faculty the common Freshman Year; departmentalization of the faculty and other changes of far-reaching importance. Advance was made in 1920 in carrying out this programme. President, Arthur Twining Hadley, Ph.D., LL.D.

YAP. One of the Caroline Islands in the Pacific, the administrative centre of the western group, prominent in 1920 as the subject of disputed claims on the part of the United States and Japan. It contained an important wireless station. Japan claimed exclusive control to the cable, but the United States contended that as the German islands in the Pacific had been ceded to the Allied and associated Powers by the Treaty of Versailles, their property could not be disposed of without the consent of the United States. Japan had brought the matter to the attention of the Assembly of the League of Nations at Geneva and Great Britain had joined her in so doing. The United States government declared that it had served notice during the Peace Conference that it reserved the right to object to exclusive Japanese control of the cable. No agreement had been reached on the subject at the close of the year. The view of the United States was that Yap should be internationalized and should be an international cable landing station, not under the control of any single Power. The position of Japan was understood to be that as her laws provided for government ownership and control of all communications in Japanese possessions, the cable landing at Yap must be exclusively under Japanese direction.

YELLOW FEVER. We condense slightly the following item from the *Medical Record* for Dec. 18, 1920. "Mr. George Vincent, President of the Rockefeller Foundation, authorizes the announcement of the discovery by Dr. Hideyo Noguchi, at the Rockefeller Institute for Medical Research, of a vaccine for yellow fever which promises to confer immunity against the disease. The discovery of the yellow fever organism has also made it possible for Dr. Noguchi to develop a serum which, it is believed, will reduce the mortality from yellow fever. Already vaccination against yellow fever of people going to tropical countries is being done at the Broad Street Hospital, New York, with vaccine furnished by the Rockefeller Institute. The first shipment of vaccine to tropical countries was made a year ago when three hundred bottles were sent to Mexico; other shipments have been made since, the latest on Nov. 10, 1920. The Central American authorities are so well convinced of the efficacy of Dr. Noguchi's vaccine that those who have been successfully vaccinated are permitted to travel without quarantine detention."

In the latter part of 1919 yellow fever had practically been extinguished for the time in the Western continent, but during the present year there was a recrudescence of cases and Dr. Noguchi repaired to Yucatan to make first hand studies of the disease.

YOUNG MEN'S CHRISTIAN ASSOCIATION. A Christian organization for the promotion of social, economic, recreative, physical, educational, and spiritual development of men and boys throughout the world. It offers a chance for fine fellowship, enjoyment, and self-betterment among young men.

UNITED STATES AND CANADA. The International Committee, as the agent of the International Convention, promotes the general work and policies of the movement. This Committee

is composed of 200 business and professional men representing each state and Canadian province, and elected triennially by the International Convention of the North American local Associations. Of this Committee, with its headquarters in New York, Mr. Alfred E. Marling is chairman and Dr. John R. Mott, general secretary. There are 47 State, group, and national Committees in Canada and the United States with their 1314 business men, that give closer and more direct help and encouragement to the 2194 local Associations in their respective States. In addition, there are a number of metropolitan committees, also county organizations giving special service to the local Associations in large cities, and to those in rural districts respectively. To aid in training the personnel for the movement in America, there are three Association colleges at Springfield, Mass., Chicago, Ill., and Nashville, Tenn.; also nine Summer Schools in various sections of the country, and twenty-seven local training centres. The Association in its various local organizations conducts definite forms of activities for symmetrical manhood and boyhood-building such as social and recreative, physical and body-building, educational, commercial, industrial, and vocational training, Bible study, religious meetings, personal interviews, life work guidance, and spiritual development.

Statistics for April 30, 1920 showed 85,106 business and professional directors, and committee men giving volunteer service; 5199 employed general secretaries and assistants; 868,892 members, of which 199,615 are boys, and 157,135 are in industrial occupations. The total net property and funds paid in is \$128,019,000. Contributions from friends in America, \$8,354,000, and the total operating expenditures, \$38,484,800 for 1920 or an increase of 31 per cent over the previous year. The service of the local Associations to men and boys includes a great variety of features, among the more important of which are: 75,305 socials, entertainments, banquets, receptions, etc.; 117,731 situations or positions secured for men through the employment sections; 308,971 different educational courses conducted by the Association; 136,255 different men and boys enrolled in the regular courses in Bible study; 26,105 decisions for the Christian life, and 8771 united with the church of their choice as a direct result of Association efforts.

The most notable event of the year was the Fortieth International Convention held in Detroit. This was the largest and most representative gathering in the history of the Brotherhood. The Canadian National Convention in Toronto was another similar important event with special significance for the growth of the movement in the Dominion of Canada. An important Boy Workers' Assembly was held in Blue Ridge. Another notable gathering was that of the Student Volunteer Convention, attended by over 7000 students and professors from nearly a thousand universities and colleges.

Along with many other organizations, the Association has turned during 1920 to many international considerations. The World's Committee held its first meeting since 1914. The World's Student Christian Federation brought together in Europe the leaders in the work of Christ among students of thirty-five or more nations.

FOREIGN. Entirely aside from its war service

to young men in the armies and navies of the world, the Association movement of America today ministers through its leaders and financial friends, to the whole range of the life of the young manhood and boyhood of some twenty nations, including the most progressive lands of Asia, Latin-America, Africa, South America and the Pacific islands world. Through the International Committee of North America, and the friends of this great work throughout the world, over 200 experienced general secretaries are leading the development of this work in foreign lands. Coupled with the forces sent from America for this service, there are over 600 native secretaries employed at local expense. While this service of the American Associations in foreign lands has been influenced by the war and its after conditions, yet in practically every foreign field the service has shown constant growth of the Associations, an increase in the spirit of voluntary service and sacrificial giving, in the multiplication of the number of native secretaries, and in the central emphasis on the distinctively spiritual and Christian character of the work. Special attention should be called to the fact that during each of the recent years there has been large growth of self-support and of indigenous leadership in most of the foreign lands. One of the most remarkable contributions of the Association is its far-reaching influence as a unifying force among the different nations and races. The plans of the foreign work were being seriously affected by the prevailing financial conditions, the exchange problem alone involving an enormous increase in the budget. During this thirtieth year of the development of Association work in foreign lands as directly related to the International Committee, there were profound changes in the social, political, religious and industrial life of the people during the period of transition from world war to world reconstruction. Japan, China, India and the Near East especially faced most difficult national crises. Latin-America was confronted afresh with her most difficult and unsolved problems. These countries, therefore, were led to consider anew what were the real constructive agencies and influences at work, and the Association was examined and tried out as never before.

The expense for the leadership and promotion of this work from America among the National Committees of foreign lands, and their local Associations was \$1,124,112 for 1920. In China the 25th anniversary of the founding of the Association in that nation was celebrated with a great convention. The first industrial Association in Japan was opened in Tokio. A Japanese secretary directs this pioneer work which is supported by Japanese funds. In India where conflicts between labor and capital are making their appearance, the Tata Steel Works has provided a fund of \$66,000 and asks the Association to begin the first welfare work among India's needy industrial classes. Similar work is beginning in other foreign lands and the Association is asked to conduct it. The foreign Associations have now come to the time when they are strong enough to take the lead in serving their communities in times of emergency when other organizations fail. During the great influenza epidemic in Brazil, the Association in several cities rendered notable service in relief and sanitation measures, receiving much praise from the public press and the officials of the Re-

public. In Porto Rico, the San Juan Association likewise ministered to the needy during the earthquake disaster. In Foochow, China, the Association quickly and successfully mobilized its forces to combat the cholera epidemic in the summer of 1920 and took the lead in organizing the Heth Committee which carried a campaign of relief and prevention which finally rid the city of that disease. Just now at the end of the year there were calls for directors and play leaders from 25 different countries. The International Olympic Committee through its president, asked the Association to assist in a plan to democratize the World Olympics and to make these games more truly a world influence.

ASSOCIATION WAR WORK. Although nearly two years have elapsed since the signing of the armistice, the war work of the North American Associations during 1920 constituted one of its three principal activities. In America, notwithstanding the putting into effect of the new policy of the War and Navy Departments, by which the government planned to conduct the larger part of the welfare work within training camps and stations, the Association carried on its work both in the army and navy among far larger numbers of soldiers and sailors than during the pre-war period, and it was evident that this service must be greatly enlarged, especially in communities adjacent to the great military camps and naval stations. Work was accomplished along educational, re-employment, and general rehabilitation lines among hundreds of thousands of ex-soldiers during the critically important demobilization period. In extent, however, by far the greatest work being accomplished by the North American Association in the midst of war conditions or in critical circumstances occasioned by the war, was that still in progress among the young men of Allied countries and among prisoners of war. The North American Associations were ministering in their war work to more than twice as many young men as they were serving in the large and growing Home Work and Foreign Work combined. In each of two fields, Poland and France, the war service plans embraced fully one million men.

The National War Work Council had hoped to be able to disband during the past year and to hand over any of its unfinished tasks to the permanent Association and other agencies; but, after prolonged consideration, it decided that, owing to the volume of the work, the size of the fund entrusted to the Council, as well as owing to the fact that America had not yet made peace, and the further fact of the alarmingly unsettled conditions in the war areas, it was their "clear duty to continue to discharge their trust until conditions were more nearly stable and normal." Headquarters are maintained at 347 Madison Ave., New York City.

YOUNG, WILLIAM. Author and play writer died, October 2. He was born in Illinois, in 1847. He was the author of volumes of verse and of a number of plays including *The Rajah* (1883); *Young America* (1894); *Woman's Wiles* (1898); a dramatization of *Ben Hur* (1899); and *A Japanese Nightingale* (produced in 1903).

YOUNG WOMEN'S CHRISTIAN ASSOCIATION. This is a national organization "to advance Christian social service by advancing the physical, social, intellectual, moral, and spiritual interests of young women." Total membership in 1920 in the national organization num-

bered 559,315 of whom 100,000 were girls between the ages of 12 and 18 enrolled in the Girls Reserve Corps of the Association. The headquarters of the National Board are in New York City, besides which there are branch offices in Philadelphia, San Francisco, Richmond, Chicago, St. Louis, Denver, Dallas, Minneapolis, Seattle, and Cincinnati. These cities are headquarters for field committees which the National Board appoints to represent it in various sections of the country. Each field committee employs a staff of secretaries to do the direct work of organizing local associations and to aid in developing the activities for girls and women which form the general Association programme. At the end of 1920 there were 185 field secretaries being employed. Figures for Jan. 1, 1921 show that there were 347 city associations in 234 cities, 78 town associations, 27 county associations, and 711 student associations. The national programme includes classes in Bible and mission study, physical training, commercial subjects, language study, domestic arts and sciences, vocational training, elocution, and dramatics, trained attendance, business law, parliamentary law, and current topics; clubs: recreational, musical, and social; management of cafeterias, boarding residences, housekeeping apartments, room registries, residential and transient hotels, summer camps, vacation homes, employment bureaus, health centres, and home investigation bureaus. Special attention is given to industrial workers, colored women, Indian women, business and professional women, women of foreign birth, and students. In 1920 the National Board conducted 40 10-day summer conferences for girls, with a total attendance of 10,840. A national training system to prepare young women for executive positions is maintained. Part of this course must be taken in residence at the National Training School, 135 East 52nd St., New York City.

The National Board has extended its work into the foreign field so that in October, 1920, it had 59 centres in Europe and the Near East with 118 secretaries, and in the Orient and South America 32 centres with 118 secretaries.

The official organ of the National Board is the *Association Monthly*. The officers in 1920 were: President, Mrs. Robert E. Speer; chairman executive committee, Mrs. John French; secretary, Mrs. Lewis H. Lapham; treasurer, Mrs. Samuel A. Broadwell; and general secretary, Miss Mabel Cratty.

YUKON. A territory of Canada, bounded by Alaska on the west and the Northwest Territories on the east and extending from British Columbia at the 60th parallel to the Arctic Ocean. Area, 207,076 square miles, of which 649 are water; pop. in 1911, 8512; capital, Dawson with a pop. in 1911 of 3013. Commissioner in 1920, George Black. See CANADA.

ZANZIBAR. A British protectorate of east Africa, comprising the island of Zanzibar (640 square miles), the island of Pemba (380 square miles), and several islets; situated off the coast of the former German colony of German East Africa. Population of Zanzibar, (1910) 113,624; of Pemba, 83,109. The Europeans numbered about 200. The chief town is Zanzibar with a population of about 35,000; and it is one of the best African ports. The natives for the most part are Mohammedans. The industry is mainly limited to the production of cloves of which the output in 1918-9 was £24,980,977. Imports,

1917-8, \$11,516,036; exports, \$10,383,149. Sultan, in 1920, Seyid Khalifa bin Harub (born in 1879); high commissioner, Major-general Sir Edward Morthey.

ZAZA. See MUSIC, *Opera*.

ZINC. The production of primary metallic zinc from domestic ores in 1920 was about 449,000 tons and from foreign ores about 14,000 tons, a total of 463,000 tons, compared with 452,272, 13,471, and 465,743 tons, respectively, in 1919. Of the output of domestic zinc in 1920 about 51,000 tons consisted of electrolytic zinc, as compared with 27,056 tons in 1919. In addition to primary zinc there was an output of about 20,000 tons of re-distilled secondary zinc, compared with 19,748 tons in 1919, making a total supply of distilled zinc and electrolytic zinc in 1920 of 483,000 tons, of which 81,000 tons was high grade zinc, 34,000 tons intermediate, 51,000 tons select and brass special, and 317,000 tons prime western. The production of the corresponding grades in 1919 was 45,377, 39,173, 146,917, and 260,024 tons, respectively, a total of 485,491 tons. Of the total output of primary zinc in 1920, about 111,000 tons were made in Illinois, as against 118,340 tons in 1919; 42,000 tons in Kansas, as against 43,942 tons; 110,000 tons in Oklahoma, as against 121,988 tons; 30,000 tons in Arkansas, as against 31,437 tons; and 74,000 tons in Pennsylvania, as against 67,521 tons.

The exports of zinc made from foreign ores were about 28,500 tons and those of zinc made from domestic ores were about 86,000 tons, compared with exports of 16,789 and 129,508 tons respectively in 1919. The exports of domestic zinc at smelters and in warehouses at the end as against 19,762 tons in 1919. The stock of zinc at smelters and in ware houses at the end of November was about 61,509 tons, as against 29,892 tons on June 30, 1920, and 36,793 tons at the end of 1919. The apparent consumption of primary zinc during 1920 was about 324,000 tons, compared with 323,964 tons in 1919 and 423,792 tons in 1918.

The recoverable zinc content of ore mined in 1920 was about 597,000 tons, compared with 557,000 tons in 1919 and 632,243 tons in 1918. The output of the Eastern States was about 102,000 tons, that of the Central States about 343,000 tons, and that of the Western States about 152,000 tons, compared with 122,000, 305,000, and 130,000 tons respectively in 1919. The gain in the output of the Central States was made possible by an increase of nearly 50,000 tons in the Joplin district, and the gain in this district was chiefly the result of an increase in the output of Oklahoma, which reached a total of about 209,000 tons, the largest zinc output ever made by a single State, but Kansas also made a good gain, producing over 68,000 tons. In 1919 Okla-

homa produced 178,410 tons and Kansas 47,620 tons. In 1920 Montana (Butte district almost wholly) apparently produced about 102,000 tons, as compared with 84,382 tons in 1919, and the New Jersey output declined to about 78,000 tons from 92,912 tons in 1919. The output of the upper Mississippi Valley was about 37,000 tons, as compared with 47,553 tons in 1919.

The imports of zinc in ore increased from 17,009 tons in 1919 to about 23,000 tons in 1920. The zinc content of ore imported from Mexico increased from 11,225 tons in 1919 to about 16,000 tons in 1920. Australia furnished ore containing 3,852 tons of zinc and Canada and other countries sent smaller quantities. The zinc content of zinc ore in bonded warehouses on November 20 was 25,642 tons.

FOREIGN ZINC INDUSTRY IN 1920. Of the European zinc-producing centres Belgium and Upper Silesia seemed to be in the best condition. Belgium started the year with a smelter output of about 4,500 short tons monthly, which it brought up by the middle of the year to about 8,000 tons. After that the output remained about stationary, so that the total production for the year was probably about 90,000 short tons. Reports near the end of the year indicated that the output is slackening and considerable stocks are on hand. The total stocks in Europe were thought to amount to 100,000 short tons. Belgian smelters had recently contracted for a supply of Australian zinc concentrates. The zinc output of smelters in Upper Silesia in 1919 was 81,596 short tons, equal to about 60 per cent of the production in 1918. Reports for the first half of 1920 indicated a little larger production than in 1919, the output for the six months being 49,643 short tons. The zinc industry in other European countries and in Japan was reported at a low ebb. Perhaps the most noteworthy happening in the zinc industry during the year was the acquisition of the Mount Read and Roseberry mines, Tasmania, by the Electrolytic Zinc company of Australasia, by which that company gained immense reserves of ore. The enlargement of the electrolytic zinc plant at Risden, near Hobart, Tasmania, continued, a zinc rolling mill and a zinc oxide plant having been installed.

In Europe although zinc production was less than before the war, the purchasing power of the manufacturing nations was unable even to take care of this amount, much less what was exported or held for export from America. At the beginning of the year it was believed that the exports of spelter from the United States would run up to 100,000 tons, and prices and production were arranged on that basis. Spelter which had been steadily rising from June 1919 scored a high record in January, 1920, with an average for that month of 9.62 cents per pound at New

UNITED STATES PRODUCTION OF ZINC 1915-1920

From Engineering and Mining Journal

(In Tons of 2,000 Lbs.)

By Ore Smelters Only

	1915	1916	1917	1918	1919	1920
Arkansas		7,637	25,701	26,750	31,396	29,966
Colorado	8,984	8,908	7,735	3,897	2,779	1,682
Illinois	161,665	181,495	178,071	141,808	118,631	109,483
Missouri-Kansas	111,052	154,396	86,505	21,834	48,347	25,131
Oklahoma	111,405	169,064	204,587	143,371	119,454	97,690
Electrolytic		10,968	27,245	88,885	25,962	57,441
East and others	114,036	147,555	154,567	138,805	180,115	158,379
Totals	507,142	680,018	682,411	525,350	471,684	479,772

* Includes Anaconda and other electrolytic production in 1915.

York from which with a temporary rally in August it steadily declined to about 6 cents in December. In like fashion the year started with a high rate of production although there were numerous strikes at the smelters, but this decreased in the second half of the year and was accompanied by decreased efficiency in labor which was able clearly to sense the prevailing situation. In 1920 it was stated that at a plant working under usual conditions the smelting of a ton of ore required $7\frac{1}{2}$ per cent more labor paid for at a rate $2\frac{3}{4}$ times greater while the extraction obtained had fallen from 88 per cent to about 82 per cent. Coal also cost more as did other supplies, but the newer mines of Oklahoma were able to produce concentrates from rich ores which made the output as regards price compare with conditions before the war. See METALLURGY.

ZIONISM. See JEWS.

ZONING. See CITY PLANNING.

ZOOLOGY. Earlier YEAR BOOKS have noted the expedition to the African Congo sent out by the American Museum of Natural History in New York City in 1909 to 1915. A survey of the collections made on this expedition showed that there were 6,000 specimens of mammals, birds and fishes, 500 reptiles and batrachians, and 100,000 invertebrates. Materials for preparing mounted groups of the Okapi and of the Square Lipped Hippopotamus were also obtained.

Slotopolsky *Zool. Anz.*, Aug.) discussed the question of natural and accidental death in the sense in which this distinction was made by Weismann, and concluded that the Protozoön has a certain portion of its plasma set apart for reproduction and this part is therefore, immortal; just as a similar separation has been supposed to occur in the Metazoa.

Orton (*Jour. Marine Biol. Ass. of United Kingdom*) reviewed the conditions of breeding in various marine organisms and concluded that temperature is the most important single factor, being more important than food, which indeed, seems to have little influence. Herdman, in his address as President of the Zoölogy section at the meeting of the British Association, discussed the generally held opinion that arctic pelagic life is more abundant than either temperate or tropic. Herdman's opinion was that variations in oceanic currents are of more importance in this connection than are differences in latitude. It seems true, however, that the greater abundance of individuals of any species in the colder waters is due to the slower rate of metabolism at these temperatures, and a corresponding greater duration of life for the individual.

The Gifford Lectures delivered in 1915 and 1916 at the University of St. Andrew by J. Arthur Thompson have been published in book form under the title of *The System of Animate Nature*. Under the general heading of "The Realm of Organisms" Professor Thompson took up such topics as the "criteria of livingness," "animal behavior" and "adaptiveness and purposiveness," in which discussion he takes a decided stand against the extreme mechanistic interpretation of vital phenomena, citing such cases as the migration of birds, and examples of the regulation and readjustment of developing eggs both under normal and under experimentally determined conditions. The farther we go into developmental mechanics the more do we recognize that physical and chemical processes are in evidence, but at the same time we do not

get appreciably nearer a mechanical description of development. Part 2 dealt with the "Evolution of the Realm of Organisms." In this he agreed with the modern school of Mendelians in their general conclusions as to the mechanism of the hereditary processes. He argues that Heredity has three functions:—(1) to secure the persistence of a specific dynamic organization; (2) to shelter the specific organization from the influence of parental modifications; (3) to allow of appearance and persistence of variations. He adopted the theory of sexual selection, believing that this process, involving elaborate courtship activities, has influenced bodily structure and behavior in ways not now fully recognized. He said that Darwin meant by sexual selection all "sifting in connection with mating, whether the female held the sieve or not," and thought that future students will give this theory more, rather than less, importance.

In the series of Monographs on Experimental Biology (see YEAR BOOK for 1919) two volumes appeared in 1920: "Inbreeding and Outbreeding" by East and Jones, and "The Nature of Animal Light," by Harvy. (See below) East and Jones discussed the question whether, as has generally been believed since Darwin's time, inbreeding in plants and animals is in itself injurious to the race, citing results of this inbreeding from the literature relating to both plant and animal heredity. In some instances (that of maize seems to be one of the most extreme) the immediate results of inbreeding are found to be not only injurious but often disastrous, though this does not happen in all cases. When the question is asked whether inbreeding is injurious simply because of the consanguinity, the answer is "most emphatically no." If unfavorable traits appear after inbreeding it means simply that they were originally present but were concealed by other characters. The authors believe that all inheritance is in accordance with Mendel's law, and in this it is evident that characters originally not in evidence because concealed by other characters may through recombinations make their appearance. Two results might follow. Since these characters are thus made evident, it should be possible for the breeder to eliminate them from the race; and on the other hand, the favorable characters could be freed from attachment to these unfavorable ones, and thus the race improved. Whether inbreeding is or is not injurious depends, then, entirely on the composition of the hereditary material of the breeding organisms. Heterosis or outbreeding, or crossing of distinct races (in cases where normal hybrids are obtained) often results in an increase in vigor of the offspring over that of their parents. East and Jones explained this on the assumption that each parent has some genes which make for vigor and some which tend to reduce this vigor. In crossing, both vigor-producing genes are brought together in the hybrid and being dominant, affect the character of this hybrid. Later generations, because they tend to repeat the genetic composition of the original parents in consequence of a redistribution of the genes may lose some of this vigor. Any individual which happened to be homozygous for the vigor-producing genes, and happened to mate with another of similar composition, would establish a vigorous race, but this combination would very rarely be accomplished. The authors conclude that the mechan-

isms which are provided for cross fertilization are to be explained as devices for producing variations, thus giving natural selection materials on which to work.

So far as human inheritance is concerned, the authors reach the same general conclusions as those given by recent experimenters that if there is nothing injurious in the germ plasma, close inbreeding is not at all undesirable, but that such inbreeding is apt to bring to the front defects which otherwise might remain hidden.

As stated above, Harvey, in a volume of the series of Monographs on Experimental Biology, discussed the "Nature of Animal Light." A few plants and many animals are luminescent, and Harvey gave a list of animals in which this phenomenon has been described, showing that in this list the distribution of luminescent animals is very erratic and does not follow any evolutionary order. The light of the firefly, so far as energy is concerned, is 100 per cent efficient, but would not be a satisfactory source of light for the human eye, since its maximum does not correspond with the maximum of sensitivity of the human eye, and since all objects seen in it are of a uniformly green hue. Light from animal sources differs from that from ordinary sources only in intensity and spectral extent. The exact function of the light in nature is not always evident. In the fireflies it seems to be a means of sex recognition, but in other cases no explanation based on experimental evidence is available. It may attract positively phototropic animals which are food for the luminous animal, toward the source of light, and it may in animals which live in the dark, serve as a means of illumination for guidance in walking.

Chemically the luminescence is produced by oxidation of a substance, *luciferin*, in the presence of an enzyme-like body, *luciferase*. These substances differ in different animals so that it is better to refer to them as the "*luciferases*" and the "*luciferins*." Contrary to earlier assumptions, neither of these substances has a fatty composition. Other chapters of the book give a detailed account of the chemistry of this process of light production (see YEAR BOOK for 1917). Hess (*Anat. Record*, Jan.) described the tracheation of some fireflies, and found that no new branches of the trachea supply the light organs, but that in the somites where the light organs are located these tracheal branches are of excessive size. They are not only larger but have a more profuse mode of branching, seemingly in connection with the need of supplying extra air to these organs. In the males of some species of fireflies, the longitudinal tracheal connectives in the somites with the light producing organs do not connect with the tracheal trunks of these somites, but become greatly branched and supply air directly to the light organs.

HEREDITY. As previous YEAR BOOKS have indicated, our present-day research in Genetics is based on various developments of Mendel's law, and the results obtained especially by Morgan and his colleagues have shown a great probability, amounting almost to a demonstration, that the genes or hereditary units which act as determiners have a very definite distribution along the chromosomes of the sex cells. Objection to the theory of crossing over (see YEAR BOOK for 1915), which plays a very large part in the explanation given by Morgan for the behavior of some of these genes, has been made that the

peculiar chromosome union known as the "chiasma type" which is pre-supposed in Morgan's explanation has really been found in too few cases to justify the importance assigned to it. Wilson (*Amer. Nat.* May-June) discussed the recent work of Janasens as bearing on this point, and concluded that this chiasma type does occur, though as a matter of fact, the evidence for it seems to be derived more from genetics than from cytology. Castle (see YEAR BOOK for 1919) held that the data given by Morgan indicated that the arrangement of the genes could be better explained by a three-dimensional figure than by arrangement in a straight line, as Morgan supposed. Morgan, Sturtevant and Bridges; and Metz (*Proc. Nat. Acad. Sci.*, Apr.) declined to accept this explanation, and gave reasons for their belief that Castle's argument was based on a misunderstanding of the data.

New varieties of the fruit fly, which has been the animal most studied, furnish the material for crossing experiments, and arise by mutation. Bridges (*Biol. Bull.*, Apr.) stated that extreme mutations are often poor in viability, and while this may be partly corrected by better culture methods it is in general true that mutants of low variability are more viable than those of high, and that these are fortunately the bulk of the non-lethal mutations. These latter are as definite in character and offer as great precision in classification as extreme mutations. This he illustrated by a description of "white ocelli," a mutation which affects the ocelli on the back of the head of the fruit fly. Muller (*Jour. Exp. Zool.*, Nov.) described more mutations of the white eye color in *Drosophila*, making 10 in all. In this case, minute deviations seem very infrequent. Mutation seems to occur in only one member of a pair of allelomorphs (i.e. mutually opposed characters) at a time.

Wodsedalek (*Biol. Bull.*, May) described the chromosomal character of the sex cells of cattle, finding that there is here a sex chromosome, which is paired in the female but single in the male. All of the ova contain one X chromosome and only half of the spermatozoa have one. Ova fertilized by the X-containing spermatozoa develop into females, while those fertilized by the spermatozoa without an X become males. Thus sex is determined at the time of fertilization, and is not, as has been suggested, modified by the time during the heat period when the female is served. Shaffer in Cicada (*Biol. Bull.*, June), Taku in Squilla (*Jour. Morph.*, Sept.) and Harmon in the Tettigidiidae (*Biol. Bull.*, April) described various phases of the chromosomal history of the germ cells. Firket (*Anat. Rec.*, Apr.) stated that in the chick and in the white rat there are two generations of germ cells, the primary and the secondary, having a different mode of origin. The former, probably in the chick and certainly in the rat, do not give rise to definite sex cells, but degenerate, showing that they are cells in "phylogenetic degeneration."

A truncate character of wing in *Drosophila* had seemed to be impossible to harmonize with the concept of a relatively fixed gene, since it appeared in a very variable fashion, and Morgan had been unable after four years of selection, to reduce the production of normal below 10 per cent. Altenburg and Müller (*Jour. Genet.*, Jan.) recorded experiments showing that this truncate appearance is really produced by three factors, t_1 , t_2 , t_3 , of which t_1 and t_2 act as intensifiers for

t_1 and the truncated character does not show unless t_2 is present. T_1 and t_2 may be present, but do not produce any observable effect without t_1 . T_1 acts as a lethal when homozygous, and this fact explains the inconstancy of the effects obtained when studying selected stock. So and Imai (*Jour. Genet.*) found two factors in the spotting of the coat color in mice, one factor being lethal when homozygous as is the case in yellow mice. Owing to the presence of the two factors a continuous series of stages from dark-eyed white, through spotting, to self-color may be produced. Bridges and Morgan (*Carnegie Inst. Pub.*, 278) described thirty-nine mutant characters whose genes lie in the second chromosome and are especially convenient as tests in crossing, while in this same chromosome Sturtevant (*Carnegie Pub.*, no. 218) found two genes which affect the amount of crossing over, usually decreasing it. Morgan (*Carnegie Pub.* no. 278) carried on mass selection on a character called "notch" which produced a notched wing, and his results apparently indicated an increase in the direction of the selection. Further experiments showed, however, that this is not due to a modification of the notch gene, but to the presence in the second chromosome of a recessive modifying factor. Outbreeding with wild flies would bring back this notch character, even in strains where it had disappeared.

The chromosomal theory of heredity is based on the assumption that in fertilization and cleavage the chromosomes derived from the two parents do not fuse, but each divides independently of the other and each of the resulting nuclei thus contains half of each parent chromosome. Smith (*Anat. Rec.* 17) found that this history of the chromosomes can be demonstrated in the amphibian *Cryptobranchus alleganiensis*, where the two can be traced as distinct up to the gastrula stage.

Interesting applications of the results obtained by the study of the character and behavior in breeding, of the chromosomes to the solving of other problems has been made especially by Morgan. In *Carnegie Publication* No. 285 Morgan takes up the question of Sexual Selection, as an explanation of the sex differences between male and female, especially in birds and insects, a theory advocated by Darwin but not now generally accepted. Morgan prefaced this discussion with an explanation of some results obtained in experiments on the Sebright Bantam, a fowl in which the male has the characteristic comb and wattles of the cock bird, but is without the typical male plumage, and is known as the "hen-feathered male." In all but one case, (this exception was not fully explained), castration of this hen-feathered male was followed by a diminution in the size of comb and wattles as is usual after castration, but there was at the same time a development of typical male feathers. Microscopical examination of the testes of this Sebright race showed the presence of luteal cells which do not occur in the testes of other races, and it seemed probable that secretions from these cells suppress the secondary sexual characters so far as these should appear in the plumage. Starting with the sexual selection theory as stated by Darwin, Morgan discussed various explanations that have been given for the secondary sex differences, and concluded that the conditions which call these forth are so diverse in different groups of animals that it seems unlikely that

such a single cause as choice by the female could have directed their evolution. In many cases the genetic composition of a highly ornamented male and of the female without this ornamentation differ only in that genes in a particular chromosome are simplex in one sex and duplex in the other. Owing to this initial difference the female bird produces an internal secretion that suppresses in her the male ornamentation, and in the mammal some secretion formed by the testis causes the full development in the male of the secondary sex characters. We are coming to recognize, Morgan said, that hereditary genes have more than a single effect on the characters of the body, and thus the secondary sex characters may be only by-products of genes whose important functions lie in some other direction.

In a later paper (*Biol. Bull.*, Oct.) Morgan described similar results in experiments on the "Campine" race of poultry, in which the hen feathered male may assume the cock feathered condition as a result of castration. The operation of castration is dangerous in the adult bird, often causing death through hemorrhage. To avoid this, he experimented by ligaturing the testes at their attachment to the body wall, and found that this gave the same results as castration. If, however, any fragment of the testis is left, the complete plumage change will not take place.

Morgan and Bridges (*Carnegie Publication* No. 278) discussed the problem of gynandromorphism in insects (cases where one part of the body is male and the other female). The history and the genetic composition of the individuals studied was known, and it was thus possible to formulate an explanation based on this composition. The experiments were performed on the fruit fly, *Drosophila*, in which the female has two and the male one, X chromosome: and the sex-linked characters connected with these X chromosomes had been to a large extent determined. It was possible, knowing through experiment, the genetic character of the individuals, to demonstrate that both the female and male parts of the gynandromorph contain the same autosomal group of chromosomes (i.e. chromosomes not X). The sex organs of the two sides are always alike, the differences between the two parts of the individual being entirely in bodily structure. The explanation offered is that in an early cleavage one of the X chromosomes fails to pass over to one of the daughter plates, and thus one half has two X's and is female, while the other has one X and is male. Since, usually, large areas of the body are involved in these cases of gynandromorphism, it seems probable that this elimination takes place at an early division, but it is possible that if smaller areas did occur they might be easily overlooked, so that there is no evidence that this aberrant division may not take place at any stage. Crozier (*Am. Nat.* Jan.-Feb.) described a salmon pink color in a female *Chiton tuberculatus* from Bermuda, a sex distinction which can have no selection significance but is due to bodily metabolism during the development of the ovary.

Morgan (*Am. Nat.*, May-June) recorded observations on the fiddler crab, showing structural conditions intermediate between the male and the female individuals in the character of the claws and the abdomen. Morgan compared these conditions with similar structures on other animals and while he did not attempt an ex-

planation he evidently thought the condition is due, in some cases at least, to irregularities in chromosomal behavior.

Vaulx (*Compt. Rend. Zool. Soc. France*) discussed the question of intersexuality in Cladocera, and the recent attempts of Morgan to explain it as conditioned by the X chromosome (see above) and of Goldschmidt (andrase vs. gynase. See YEAR BOOK for 1917); and decided that none of these theories apply to the cases he studied. In these we must assume a combination effect produced by changes in sex dominance in different parts of the body. There is, he thought, a general sex instability due to a variety of causes.

Evidence that selective breeding experiments do not develop any more extreme individuals than were present at the beginning was shown by MacDowell (*Jour. Exp. Zool.*, May), in *Drosophila*, where he selected for forty-nine generations for an increased number of bristles. In the early generations the high-grade parents produced rather better offspring than did the low-grade, but this was not the case in the later generations. After the forty-ninth generation selection was suspended, and later generations showed that there was no tendency for the high-grade parents to produce any higher grade offspring than did the low-grade parents. Selection reduced the amount of genetic difference between the germ-cells, but there was no evidence that any genetic differences not present at the beginning had been operative. Cases where continued selection seemed to have modified the genes of a race have been explained by the Mendelians as really due to multiple factors which become separated as a result of the selection, and give rise to apparently new characters. Sumner (*Jour. Exp. Zool.*, April) in a study of geographical variations of the mouse *Peromyscus maniculatus* and the results of crossing these races, concluded that the variability which appears in later generations is due to the fusion of the parental characters, giving rise to a perfect blend. He admits that this might be explained on the multiple factor hypothesis, but held that the other explanation is the more reasonable.

Davenport (*Am. Nat.*, March-April) argued that the non-appearance of twins in human births is due to lethal factors in the spermatozoa, and that the appearance of twins indicates that the spermatozoa are physiologically more active.

Duerden (*Am. Nat.*, July-Aug.), described callosities on the sternum and pubis as well as in other localities in the ostrich, and showed how these might arise in each individual as a direct result of pressure on these parts during the ordinary activities of the bird. Study of the embryo showed that these callosities are present before hatching, giving the appearance of the inheritance of an acquired character. Duerden regarded this as really such an inheritance, though not one represented by a germinal variation. Since the ability to form callosities is possessed by all parts of the body, this really represents merely a new relationship set up between factors already present resulting in an earlier appearance of the character in question.

INTERNAL SECRETIONS. Steinach (*Archiv. F. Ent.* Vol. 46) discussed the results obtained by him in transplanting ovaries into the body of a castrated male, and, *vice versa*, transplanting testes into the body of a castrated female. In all of these cases the animals took on the bodily

and mental characters of the opposite sex, showing that these sex characters are due to sex hormones. The hormone of one sex produces its appropriate sex characters and inhibits those of the other sex. Hermaphroditism must in all cases be referred to a condition in the embryo where the separate sex gland did not fully differentiate, and a castrated young animal does not develop normal adult sex characters. If a testis be implanted under the skin of a male, the sperm cells degenerate, but the mass of interstitial cells remain, and under the influence of the secretions from these the animal will equal or surpass normal ones in growth and sexual power. Similar results follow similar experiments on the female. Can we then, by implantation renew youth? Steinach says that we can. By opening the animal and ligaturing the vas deferens, the sperm cells will be caused to degenerate, but since the interstitial cells remain, the animal renews its youth. Steinach records the clinical history of three cases in man, where by this operation completely senile men had been restored to full sex vigor. Harms (*Zool. Anz.*, Aug.) reached precisely similar conclusions as a result of his experiments on guinea pigs, where transplantation of pieces of testes under the skin of senile pigs, resulted in a renewed sexual vigor lasting for six months.

In the YEAR BOOK for 1919 mention was made of the results of removing the pituitary body of the frog. Similar experiments were recorded by Smith (*Amer. Anat. Mem.* No. 111), who removed the pars buccalis of the hypophysis, with the result that changes appeared in the pigmentation, the growth rate, and in most of the other endocrine organs. The young frog is albino and has a slow growth rate. A diet of the fresh anterior lobe replaces the principle lost by the operated frog, and this has a practical value in that the treated frog may be used to test preparations of the anterior lobe for the presence or absence of the growth principle. Alcoholic and aqueous extracts of the gland do not possess this, but it is present in the residues. Masaglia (*Endocrinology*, Oct.-Dec.) gave further evidence that the testis of the male fowl produces a secretion which determines the male instincts and plumage. Pezard in the same Journal, discussed the results of various experiments, in which he shows that the maintenance of the sex characters depends on the constant presence of a minimal amount of testicular parenchyma. If this minimal amount is present, the characters appear, but beyond this point there is no relation between degree of development of the characters and the amount of the gland.

PROTOZOA. Landes (*Am. Nat.*, Sept.-Oct.) described an amiconucleate race of paramoecium and pointed out that since in all described cases the micronucleus is an important organ in conjugation, this discovery will be an important one for further research. Evidently a type of reorganization must occur here which is very different from any yet observed. Woodruff and Erdmann (see YEAR BOOK for 1917) described a process of endomixis in Paramoecium. Erdmann (*Archiv. f. Entwick.*, 46.1) reported on further studies, giving the results of an elaborate statistical study of size inheritance in this genus. She concluded that heritable variations in size can occur without conjugation. "The rigid conception of the genotype does not hold for Protozoa."

Taylor (*Publications of Univ. of Cal.* 19) described a neuromuscular apparatus in *Euplotes patella*, in the form of a fibrillar system which is neither contractile nor supporting, but does possess conductive properties functioning in the coordination of the movements of the locomotor organelles with which they are intimately associated. Kofoid (*Univ. of Cal. Pub.* 19) reported on a new study of *Noctiluca* and concluded that this is really a Dinoflagellate much modified through distension by hydrostatic vacuoles. So far as this genus is concerned, the order Cystoflagellate does not exist, though it may be retained for such forms as *Leptodiscus* and *Craspedotella*.

PORIFERA. Van Tright (*Rev. in Biol. Cent.*, Jan.) gave results of study on the biology of fresh water sponges. The green cells in these sponges are not symbionts, but food, or at least an intermediate stage between symbionts and food. The water stream, which is often very rapid, is kept going by the action of the flagellae of the flagellated cells (choanocytes.) Digestion takes place in the amoebocytes, sometimes in the protoplasm and sometimes in vacuoles.

COELENTERATES. Hickson, (*Quart. Jour. Mic. Sci.*, July) described observations on *Protohydra*. This genus was first found in England in 1868 at Ostend, and rediscovered in 1891 and 1892. It was later found at Southampton and has been studied there by Hickson for the past four years. It occurs only in estuarine pools where the sea water comes in only at spring tides. Parker (*Jour. Exp. Zool.*, Nov.) described activities of *Renilla*, in which two separate forms of peristaltic movement occur, one in the peduncle and one in the rachis. One of these tends to depress the colony into the sand, the other to raise it out. At night, but not by day, this coral is highly luminescent, the luminescence being located on the dorsal surface of the rachis. The activities of *Renilla* are colonial, not zooidal, the zooid being dominated by the colony.

Komai (*Annot. Zool.*, Japan), described the anatomy and embryology of *Coeloplana bocki*, and concluded that this represents a highly specialized form of the Ctenophora derived from a Cydippid ancestral form, by the loss of old characters and the acquirement of new ones in adaptation to a change of life from pelagic to creeping. The entire creeping surface was derived by the turning out of a large part of the inner pharyngeal surface of the ordinary Cydippid. In a later paper in the same journal Komai described a parasitic coelenterate living in *Salpa* and showed that it is without doubt a degenerate Ctenophore.

PLATHELMINTHES. In the so-called digenetic trematodes, which have two hosts, and a different phase of the parasite in each host, it is customary to speak of this as alternation of generations. Kathariner (*Zool. Anz.*) concluded that it is incorrect to speak of this as an alternation of generations, for the cells from which the cercaria generation develop are a part of the original fertilized egg, which have passed unchanged through the earlier stages and have begun to develop here. Thus there is no break in the continuity of the germ plasma.

NEMERTINEA. Coe (*Biol. Bull.*, July) described sexual dimorphism in some of the pelagic nemerteans where the sex differences are so great that male and female have been described as of different genera. In *Nectonemertes* for example,

the male has a pair of long muscular tentacles which extend laterally from the body walls directly back of the head. These are used for locomotion, but their chief function seems to be to hold the female during insemination.

ANNELIDA. Lippo (*Biol. Cent.*, July,) described experiments on the reproduction of *Stylaria*, the fresh water annelid, where both reproduction by fission and sex reproduction occur. He was unable to discover that either feeding or removal of water in any way stimulated the beginning of the sex reproduction, but did decide that an increase in temperature to 18° to 20° would have this effect. Where sexual individuals are found in the cooler months as in October, it simply means that the sex organs have been carried over from the warmer time. In animals put into a warm room from a cold one this change does not take place, but it does in buds that have been given off from animals which have been thus transferred. The ability to form buds ceases with the formation of the sex organs, and the animal dies after egg laying.

MOLLUSCA. Piéron (*C. R. Soc. Biol.* 82) stated that limpets which live attached to rocks, show a topographical memory for their particular site. They feel over the surface of the rock with their cephalic tentacles, and to a certain extent with their pallial ones. Kinesthetic memory, gravity, and illumination also coöperate in this process.

CRUSTACEA. Cowles (*Proc. Acad. Nat. Sci.* Jan.) described a transfer of a sea-anemone from one shell occupied by a hermit crab to another shell when the animal itself changed its dwelling. The anemone which was attached to the first shell was loosened from its attachment by the claw of the crab, and eventually put in place on the new shell. The process was a slow one, and involved much pulling about of the anemone.

INSECTA. Uichanco (*Philippine Jour. Sci.*) described some Philippine termites which make nests rarely over two metres high. Beneath an outer crust of clay they grow coral-like fungus gardens. These mushrooms may break through to the surface and are eaten by man. In the swarm of this termite there are about five females to one hundred males. Edwards (*Ann. Mag. Nat. Hist.* 9, vi. 34) described some midges which when flying seemed to be extremely long. Examination showed that when flying these insects evert from the sides of the abdomen very long tubes. He found such tubes occurring also in a number of related species, and made the suggestion that possibly they are scent organs, functioning as recognition means in mating. Seguy (quoted in *Parasitology*) reported that in France the larvæ of house flies may bore their way into the bodies of snails and spend the winter there. Bresslau (*Biol. Cent.*, Aug.) found in the larvæ of a number of German mosquitoes a peculiar egg tooth on the dorsal surface of the head of the larva. This is used to cut off the top of the egg when the larva is hatching, and is later lost in the first moult. Denning (*Nature*, May) recorded observations on wasps in England. The queens appear at the third or fourth week in April and look for places to build nests. Denning lists *Vespa germanica*, *V. rufa* and *V. vulgaris*, but does not say on which his observations were made. In a month the queen will make 1136 journeys to get material for food and to build the nest. The young queens leave the nest in August and September. A strong nest had

1118 queens and 995 drones. A small nest of *V. germanica* killed 2000 flies in one day and Denning estimated that a strong nest would kill about 12 times as many. Brues (*Am. Nat.*, July-Aug.) stated that in the choice of plants as food by insects several factors are involved: (1) Odor and taste of plant, as is indicated by the use by the same insects of several members of the same plant family, where there must be a similarity of taste; (2) a somewhat similar recognition method but based on less obvious odors or tastes than the above; (3) similarity in the immediate environment or general form of food plant; (4) chance associations which have become fixed. Mrs. Goodrich (*Quart. Jour. Mic. Sci.*, June) showed that in the practical work of studying bee diseases, it is often difficult to decide whether a bee died of disease or of old age. Preliminary studies which she has made indicate that the condition of the nerve cells and that of the glands are good criteria. Bishop (*Jour. Exp. Zool.* 31, 2) described the sex organs of the honey bee and the method of sperm transfer. The male is unable, for at least nine days of imaginal life, to fertilize the female, owing to the immature condition of the sex organs. In copulation, a mucous secretion follows the sperm, forcing these farther into the body of the female, and then hardens, forming a plug behind the sperm when the male organ is torn away. Since mating always takes place in the air, this description was drawn following an examination of the female organs before and after copulation.

ARACHNIDA. Although the statement has been made that the Solifugidae have no tactile organs, Dahl (*Zool. Anz.*, Aug) stated that they have well developed sensory (tactile) hairs, imbedded in the chitinous outer layer of the body. A nerve carrying a ganglion near its outer end enters this hair, and even a mild movement of the outer end of the hair will cause a considerable stimulation of this ganglion. Beside these sense hairs are other stouter structures which do not connect with nerves and are evidently not sensory. Probably they are simply protective and possibly aid in catching food. Other finer hairs seem to have as their function the keeping of water from the surface of the body, and there is another form, easily vibratile, which may have to do with tone perceptions.

FISHES. Lee (*Nature*, Sept.) stated that while confusing details often occur in the markings on the scales of fishes, so that it is sometimes necessary to study a considerable number in order to reach accurate conclusions, it is true that up to 5 or 6 years of age, the rings on the scales give an accurate indication of the age of the fish. This may be determined even on canned fish. Gilchrist (*Quart. Jour. Micro. Sci.*, July) described a form of ecdysis in a fish, *Agriopus*. The outer layers of the epidermis become striated and form a columnar structure which is thrown off. A description of the microscopic structure of this layer is given in the paper. Thilo (*Zool. Anz.*, Aug.) described the shifting of the eye in a plaice, giving a detailed description of the mechanics of this process. In many individuals the process is imperfect and the lower eye is lost.

Reighard (*Biol. Bull.*, Jan.) described the breeding habits of the suckers *Catostomus commersoni*, *Moxostoma aureolum* and *Hypentelium nigricans*, all of which breed in swift water in small streams with a gravel bottom. In all, the males have pearl organs at the breeding

seasons, and in the last named species the female also shows them. Reighard thought that these are used as holding organs to enable the sexes to remain together in the running water. There is no definite pairing in any of these species, the female mating with two males at a time in the first two species and with as many as six in the last, and she may mate several times. The eggs are scattered over the whole spawning ground.

MAMMALS. Hartman (*Anat. Rec.* 19.5) reported that, contrary to the usual belief, the young opossum after a period of gestation of ten days, finds its own way to the pouch on the abdomen of the mother and is not assisted by her in this process.

ZORN, ANDERS LEONARD. Swedish sculptor, died August 22. He was born in Sweden, Feb. 18, 1860 and was educated at the Academy of Fine Arts at Stockholm. He travelled on the continent and in England, painting at first in water colors. He acquired the art of etching while in London, and in 1888 began to paint in oils. His "Fisherman from St Yves" was bought by the Luxembourg a little later, and in 1889 his portrait of himself was taken by the Uffizi in Florence. He received the gold medal at the Paris Exhibition in 1889. After 1893, he visited the United States several times and painted portraits of Americans. His chief work is the statue of Gustavus Vasa at Mora in Sweden. He painted portraits of various Americans and nearly all the members of the Swedish royal house. Among them may be mentioned: King Oscar of Sweden (1898); King Charles of Sweden (1898); "Harald Wieselgren" (1900, National Gallery, Berlin); "Coquelin Cadet"; "Portrait of the Artist" (Stockholm Museum); and "The Toast." Among the figure compositions: "Baking in Mora" (1889); "Night Effect" (Gothenburg); "Summer in Sweden" (National Gallery, Berlin); "Midsummer Night Dance at Dalecarlia" (1897, National Museum, Stockholm). Later works are: "Dagmar"; "Matins on Christmas Day"; "Watering the Horse"; "Nude" (Metropolitan Museum, New York); "Started" (1912). Among his famous etchings are those of Renan, August Strindberg, Paul Verlaine, Anatole France, and the "Portrait of the Artist and his Wife." Besides the statue of Gustavus Vasa above mentioned his more famous sculptures include "Alma"; "Grandmother" (1892); "Faun and Nymph" (1896, bronze statuette). See J. N. Laurvik. *Anders Zorn* (New York, 1913).

ZULULAND. A portion of the province of Natal in the Union of South Africa. It was annexed to Natal, Dec. 30, 1897. Area, 10,424 square miles: pop. (1911), 219,606.

The inhabitants, mainly Zulus, are largely engaged in cattle-raising but cultivate the soil to some extent, raising maize, millet, sweet potatoes, tobacco and beans. There are large sugar plantations which have been developed by the whites who also raise tea and coffee in the coast region. Anthracite has been mined but mineral resources have not been developed. In respect to provincial matters Zululand is governed by the provincial council of Natal, and otherwise by the parliament of the Union of South Africa, being represented in the lower house. British policy has tended to entrust the natives with the administration of their own affairs so far as possible.

ZUYDER ZEE, DRAINAGE. After several years' consideration of the project, a bill for the drainage of the Zuyder Zee was passed in June, 1918. The time required for the completion of the work was estimated at thirty-three years, and the cost at 189,000,000 florins, exclusive of interest. The plan contemplated the dyking in of four distinct areas as follows: (1) The island of Wieringen; (2) a tract lying to the south of the town of Hoorn; (3) one extending along the coast of Gelderland near the river Eem; (4) one on the south coast of Friesland. The total acreage of these four areas was placed at 521,170. Nine years according to the estimates would be required for the construction of a great embankment or dam which would extend to the village of Plaam on the west coast of Friesland from a point near the northeastern angle of the province of North Holland; total length 29,300 metres at a height above Amsterdam water level of 5.40 metres. Upon the reclamation of these

four areas a fresh-water lake which will be formed near the centre will serve as a water supply for the surrounding region and at the same time facilitate drainage. A great improvement in production was predicted from the cultivation of hundreds of thousands of acres of redeemed land. In 1920 a commission was investigating the economic problems involved in the execution of the plan, especially the compensation of the Zuyder Zee fishermen and those engaged in industries depending upon the fisheries, for their occupation would be destroyed. Those directly engaged in fishing numbered only 3017 but the total number of persons affected was placed at 500,000. The value of the annual catch in the Zuyder Zee has been placed at over 2,000,000 florins. A scheme for pensioning those who were thus deprived of their means of earning a living was proposed but the details had not been worked out at the close of the year.

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